The integration of immigrant youth in friendship networks and school communities

Author: Andrew Reynolds

BOSTON COLLEGE
School of Social Work

THE INTEGRATION OF IMMIGRANT YOUTH IN FRIENDSHIP NETWORKS AND SCHOOL COMMUNITIES

A dissertation
by

ANDREW D REYNOLDS

Submitted in partial fulfillment
of the requirements for a degree of
Doctor of Philosophy

JUNE 2016

THE INTEGRATION OF IMMIGRANT YOUTH IN FRIENDSHIP NETWORKS AND SCHOOL COMMUNITIES

A dissertation

by

ANDREW D REYNOLDS

Dissertation Chair: Dr. Thomas M. Crea

Abstract

The ability of school communities to develop successful integration strategies for youth from immigrant communities is of pressing concern. The goal of this dissertation is to explore how immigrant youth interact with their peers in friendship networks and school communities in order to inform efforts to promote the successful integration of immigrant youth in US schools. Data from the 1994-1995 National Longitudinal Study of Adolescent to Adult Health (Add Health) are used in three separate studies to examine processes of integration. First, the integration of immigrant youth is analyzed at dyadic, network, and school levels. Second, exponential random graph modeling (ERGM) is used to examine how immigrant generation plays a role in friendship formation in 63 US schools. Third, cross-sectional ERGM and longitudinal stochastic actor-based models (SABM) are developed to examine how race, immigrant generation, spoken language, and social network processes give rise to youth friendship networks in one US school. Key findings are as follows: overall, evidence suggests signs of successful integration. First-generation youth are located only slightly on the margins while second-generation youth are located in positions of social advantage. Second, school contexts change the

nature of friendship decision-making. Immigrant youth in more diverse schools are more likely to integrate through cross-group friendships, providing evidence for contact theory of intergroup relations. Third, while immigrant generation and spoken language emerge as salient predictors of friendship formation, other factors such as grade level, race/ethnicity, as well as social network processes remain the primary drivers of friendship formation. In the final chapter, an applied theory of immigrant integration in school settings grounded in theories of social structure is proposed. Together, the findings of this research will inform efforts to serve culturally and linguistically diverse youth in American schools and aim to help promote the integration of youth from immigrant communities.

DEDICATION

To Susan, for your incredible love and support thoroughout my five years of doctoral studies and for always understanding the life of a doctoral student. Thank you for encouraging me every step of the way, and for helping me to remember that the God who has accompanied me through my graduate school formation will continue to accompany me in my life's work and service to youth on the margins.

To Nora, for always reminding me to take things one step at a time, and for always asking me to go for a walk to see the geese. I sleep easier knowing that our future will be in the hands of such considerate, loving, and intelligent young people like you.

To Baby #2: May you and Nora be the rockstar youth of an optimistic and hopeful generation. I can't wait until you're born.

ACKNOWLEDGEMENTS

I would like to thank the many people who have played an incredible role in supporting my formation as a social work researcher and educator at Boston College. First, this dissertation and would not have been possible without the countless hours of support and mentorship from my chair, Tom Crea, and my committee members, Ruth McRoy and Jackie Lerner. Tom, thank you for supporting me throughout my research journey – from cash transfers in Sub-Saharan Africa to social networks and back again. You have taught me to give thoughtful attention to social context and to keep the lived experiences of the communities we serve at the foreground of research. Ruth, thank you for your support from the social welfare course in the first year of the doctoral program all the way to your present mentorship and guidance throughout the dissertation and academic job search process. Your wisdom has been invalueable! Jackie, thank you for pushing me to think like a developmentalist and to see everything as bidirectional, in context, and occurring over time. You've taught me the value of asking good questions and to push the field of adolescent research in new directions.

I would also like to thank those in the Boston College School of Social Work who have accompanied me through my journey, in particular Marcie Pitt-Catsouphes, Jim Lubben, Debbie Hogan and Brenda Vitale. My fellow doctoral students: you've supported me through it all. I'm so thrilled to know that our profession will soon be in the hands of your thoughtful and committed leadership.

I would also like to thank Sarah Castricum, Tim Lindgren, Bryan Blakeley, Stacy Grooters, and all who work at the Boston College Center for Teaching Excellence for your mentorship and support in my work as an instructional designer. You have modeled

for me what an ideal university environment – one characterized by collaboration, mutual encouragement, and the sharing new ideas – might look like in practice. Thank you for encouraging me in my doctoral studies and for giving me the opportunity to grow as an educator. To the many faculty and instructors across the university who have so openly shared their teaching with me through my work at the CTE: it has been an honor and joy to learn from you. Thank you for welcoming me to the wonderful world of teaching.

I would also like to express my gratitude for the many people across Boston College who have supported my formation in graduate school, including those in Campus Ministry, Residence Life, and the School of Theology and Ministry. In addition, I extend my appreciation to those at the Salem State School of Social Work for opprotunities to teach, and to the Univeristy of Kentucky Links Center as well as Steven Goodreau at the University of Washington for statistical consultation. To the community of St. Mary of the Angels in Roxbury/Jamacia Plain: thank you for the many years of support, love, and community. You've taught me a 6/8 Gospel rhythm (with a little Merengue!) and how to "lay my burdens down" no matter what may come.

To my Dad and brothers: thanks for being there with me since the beginning. You knew me before I was a doctoral student and continue to remind me of the values that brought me to this work in the first place. Thank you!

Finally, Susan and Nora – thank you for supporting me through it all, and for teaching me to keep my balance and focus on what matters most. You are my closeset social bond – my network – and give me hope that we'll all live a little more connected to each other.

This research uses data from Add Health, a program project directed by Kathleen Mullan Harris and designed by J. Richard Udry, Peter S. Bearman, and Kathleen Mullan Harris at the University of North Carolina at Chapel Hill, and funded by grant P01-HD31921 from the Eunice Kennedy Shriver National Institute of Child Health and Human Development, with cooperative funding from 23 other federal agencies and foundations. Special acknowledgment is due Ronald R. Rindfuss and Barbara Entwisle for assistance in the original design. Information on how to obtain the Add Health data files is available on the Add Health website (http://www.cpc.unc.edu/addhealth). No direct support was received from grant P01-HD31921 for this analysis.

TABLE OF CONTENTS

DEDICATION i
ACKNOWLEDGEMENTS ii
TABLE OF CONTENTS ii
LIST OF TABLES v
LIST OF FIGURES vi

Chapter I: Introduction 1
Integration and youth friendship networks 4
Dissertation Focus 5
Literature Review 6
Theories of acculturation and integration 7
Racial and ethnic preferences in friendship formation 9
The "immigrant paradox" and peer relationships 15
Friendship choices and academic outcomes of immigrant youth 18
Research Approach 22

Chapter II: The integration of immigrant youth in schools and friendship networks 25
Abstract 25
Introduction 26
Integration of immigrants in US schools 28
Integration and peer friendships 31
Dyadic integration 31
Network integration 33
Institutional integration 34
Same- and cross- culture friendships 35
Theoretical Framework 36
Methods 37
Measures 39
Analysis 43
Results 44
Dyadic integration 47
Network integration 51

Institutional integration 55
Discussion 58
Implications and Limitations 63
Conclusion 65

Chapter III: Immigrant integration and friendship formation among youth in US schools 67
Abstract 67
Introduction 68
Same-group friendships: Homophily 69
Cross-group friendships: Opportunity, contact, and competition theories 71
Network-based theories 74
Research Questions 76
Methods 77
Measures 78
Analysis 79
Results 80
Study 1: Ellis Island Academy 80
Study 2: Full sample of 63 Schools with immigrant populations in Add Health 86
Limitations 91
Discussion 93
Implications 97

Chapter IV: Immigrant generation, language use, and network processes as predictors of friendship formation in a culturally and linguistically diverse school 99
Abstract 99
Introduction 100
Theoretical Framework 101
Literature Review 102
Immigrant generation, language ability, and friendship formation 103
Research Question 104
Methods 105
School characteristics 105
Analysis 107
The exponential random graph model (ERGM) 108

The stochastic actor-based model (SABM) 109
Measures 111
Missing data 113
Results 116
ERGM Models 119
SABM Models 122
Discussion 125
Conclusions 127

Chapter V: Toward a theory of immigrant integration in schools 131
Paper #1: The integration of immigrant youth in schools and friendship networks ... 131
Paper #2: Immigrant generation and friendship formation 134
Paper #3: Immigrant generation and friendship formation 137
Additional Limitations 139
Future Research 141
Building a theory of immigrant integration in schools 142
Conclusion 147
References 148

LIST OF TABLES

Table 1: Study variables by immigrant generation, with ANOVA comparisons 45
Table 2: Friendship integration: Best friends..... 48
Table 3: Friendship integration: Isolates..... 50
Table 4: Network integration: Popularity and centrality 52
Table 5: Network integration: Social status and density 54
Table 6: Institutional integration: School connection and extracurricular activities 56
Table 7: Dyadic-independent ERGM, Ellis Island Academy..... 84
Table 8: ERGM estimates (means of OR and CI) across 63 schools 87
Table 9: Percentage of significant ERGM estimates across 63 schools 89
Table 10: School characteristics by immigrant generation (Wave 1, in-home survey).. 106
Table 11: School characteristics by grade level (Wave 1, in-home survey)..... 107
Table 12: ERGM models for waves 0, 1, and 2..... 120
Table 13: SABM model parameter estimates of friendship network change 123
Table 14: Integration in school settings: Structural forces, theoretical frameworks, and mechanisms of change 143

LIST OF FIGURES

Figure 1. Patterns of desegregation and resegregation in the South, 1954-2011. 2
Figure 2. Theoretical model of immigrant integration in schools. 37
Figure 3. Dyadic, network, and school integration by generation and race/ethnicity. 46
Figure 4. GPA by immigrant generation and race/ethnicity..... 65
Figure 5. Network graphs of Ellis Island Academy Friendships..... 81
Figure 6. Proportion of same-group ties out of total friend group ties (degree) 82
Figure 7. Homophily by school composition 91
Figure 8. Goodness of fit plots, Model #2, Ellis Island Academy 92
Figure 9. The Markov Chain process of friendship selection 110
Figure 11. Wave 0 friendship nominations, race/ethnicity and immigrant generation .. 117
Figure 12. Wave 1 friendship nominations, race/ethnicity and immigrant generation .. 118
Figure 13. Wave 2 friendship nominations, race/ethnicity and immigrant generation .. 118
Figure 14. Homophily by school composition 136

Chapter I: Introduction

Projections of demographic shifts in the immigrant and native population in the United States suggest that the country is becoming more culturally and linguistically diverse. By 2060, researchers estimate that 56% of the US population will be people of color, and that 78 million, or nearly 1 in 5 (18.8%) of the US population will be foreign born (Colby & Ortman, 2014; Taylor, 2014). These trends suggest that the number of immigrants and children of immigrants is reaching historic levels unseen since the 19th century, and that this trend will radically change the cultural composition of the United States. In school communities, this demographic trend has resulted in a "New Mainstream" of students characterized by greater cultural and linguistic diversity (CLD), filling classrooms where diversity is the norm rather than the exception (Scanlan & López, 2014).

This rising demographic trend in the number of CLD students is accompanied by a second demographic trend characterized by increasing racial and ethnic segregation in schools and communities. In the 60 years since the historic passage of *Brown vs. the Board of Education*, the Civil Rights Project found that school segregation in the United States has been on the increase since the mid-1980s, particularly for Latino students in the West. School demographic trends across the country are similar to the U-shaped curve of segregation in the American South (see Figure 1), with the highest levels of integration in the mid-80s followed by returns to segregation over the past two decades (Orfield & Frankenburg, 2014). The number of both Black and Latino students in hyper-segregated schools (those with 90-100% students of color) has increased, with some of the greatest increases occurring in the American West, where school segregation is most

prevalent among Latino youth (Orfield & Frankenburg, 2014). While it should be noted that some research suggests that the years after 2000 have been marked by declines in segregation (Stroub & Richards, 2013), this general trend suggests that many of the efforts of the Civil Rights Movement to desegregate schools have been lost as schools have become divided along racial and ethnic lines. This "Shame of the Nation", decried as a return to "apartheid" by writer Jonathan Kozol (2005), suggests that demographic trends towards increasing diversity in the United States might not in fact be accompanied by racial, cultural, and linguistic integration.

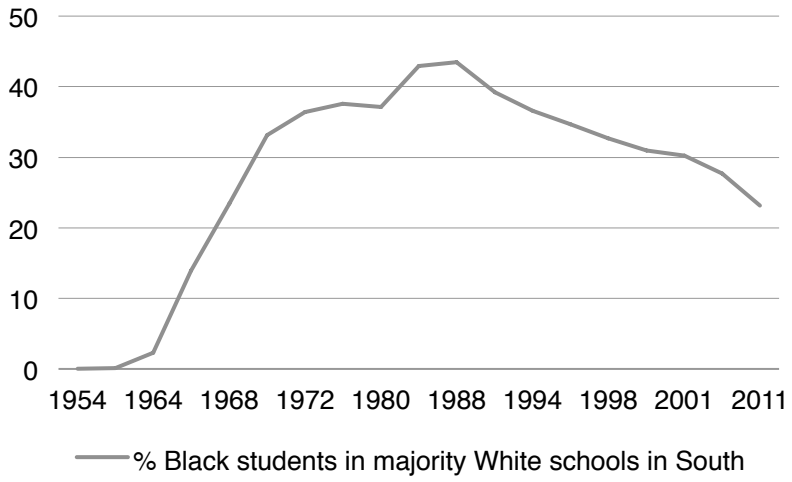

Figure 1. Patterns of desegregation and resegregation in the South, 1954-2011. Adapted from data as presented in Orfield and Frankenburg (2014) from Common Core of Data (US Department of Education, 2016). Data prior to 1991 from Orfield (1983).

A third area of research raises another broad question related to the study of immigrant integration: does integration in fact lead to better outcomes for immigrant communities? Recent research documenting remarkable differences in academic, behavioral, and health outcomes between recent, first and second-generation immigrants and their third-generation and native-born peers suggests that in some cases, integration

or assimilation may result in negative developmental outcomes (Bui, 2012; Crosnoe, 2012; Garcia Coll & Marks, 2012; Han, 2012). Most literature suggests that despite the hardships and barriers associated with migration from one culture to another, youth born in another country and living in the United States tend to have better academic, behavioral, and health outcomes in comparison to their native-born peers (Crosnoe & López Turley, 2011; Garcia Coll & Marks, 2012; Mendoza, 2009). Research suggests that there are differences in which generation is better off depending on the outcomes of interest and the context of immigration, and that these differences vary by immigrant subgroup. Generally, academic achievement peaks among 1.5 (children born in another country, but who have lived most of their lives in the US) and second-generation youth (children born in the US to immigrant parents) (Boyd, 2002; Crosnoe & López Turley, 2011).

Additionally, some research suggests that foreign-born youth are less likely to engage in risk behaviors. First-generation Latino youth are less likely to engage in binge drinking (Cavanagh, 2007), though there may be differences among Mexican, Cuban, and Puerto-Rican subgroups (Eitle, Wahl, & Aranda, 2009). Asian, Latino, and White immigrant youth tend to have lower levels of cigarette, tobacco, and marijuana use in comparison to their native counterparts (Bui, 2013; Kopak, 2012), with some studies suggesting acculturation factors and parental monitoring may be protective for youth of some immigrant groups (M. Allen et al., 2008). Immigrant youth are also less likely to engage in externalizing behaviors, and tend to report stronger relationships with parents and their school (Salas-Wright, Vaughn, Schwartz, & Córdova, 2015). This relationship has been coined the "immigrant paradox", as one might expect immigrants to fare worse

given the social, economic, and cultural challenges associated with migration. Yet what happens *after* the immigrant paradox is an area of great debate among researchers, as the research remains unclear as to whether 1) processes of immigrant integration are in fact occurring (Orfield & Frankenburg, 2014; Stroub & Richards, 2013) and 2) how integration relates either positively or negatively to immigrant health and wellbeing (Alba, Sloan, & Sperling, 2011; Crul, 2004; Lichter, 2013). To date, research has focused on individual or cultural factors to explain differences in the immigration paradox, while largely ignoring how integration through informal social networks and school communities may function as a complementary explanatory factor. This research study focuses on immigrant integration with the intention of informing such debates on the immigrant paradox among immigrant communities in the United States.

Integration and youth friendship networks

Situated within these larger demographic trends and theoretical debates, there is increasing interest among social scientists in the processes that lead to integration among adolescent peer friendship networks. Peer relationships provide an important social context for adolescent development (Steinberg & Monahan, 2007), and can provide insight into the ways in which race, ethnicity, immigrant generation, and language all play a role in how friendships are formed and how friendship decisions impact adolescent health, behavior, and learning outcomes. While many studies of integration focus on school-level indicators of integration (e.g. percentage of students of color in majority-White schools) (Goosby & Walsemann, 2012; Orfield & Frankenburg, 2014; Stroub & Richards, 2013), recent developments in the science of network analysis provide a new methodological approach to the study of social integration to examine integration at the

network dyadic level. Two landmark studies of peer relationships by Moody (2001b) and Goodreau, Kitts, and Morris (2009) have used this analytical approach to identify school-level and network-level processes that give rise to adolescent friendships and examine specifically tendencies toward homophily (preference for similar friends) and, in turn, racial and ethnic integration or segregation. While these studies both contribute to the knowledge of how race and ethnicity interact with individual preferences to result in adolescent subgrouping along racial and ethnic lines, both of these previous studies focus on race and ethnicity as factors that influence adolescent friendships without examining immigrant generation or spoken language. While recent studies on youth networks in the Netherlands (Vermeij, van Duijn, & Baerveldt, 2009), Germany (Leszczensky & Pink, 2015; Windzio, 2015), and across Europe (Smith, Maas, & van Tubergen, 2014) have examined adolescent friendship as related to ethnicity and immigration there are no studies to date that have used social network analysis to examine explicitly both individual and network processes that are associated with adolescent friendships from a perspective that takes into account the importance of immigrant generation and language with a population of US adolescents. As US youth transition to the "new mainstream" characterized by a culturally and linguistically diverse majority, very little is known about how integrated this "new mainstream" is in youth friendship networks and school social structures.

Dissertation Focus

The purpose of this dissertation is to examine the processes of immigrant integration among the friendship networks of youth in school contexts. The dissertation will be divided into three separate but related studies, each focusing on separate questions

and using distinct methodological approaches to describe the integration of immigrant youth across dyadic, network, and school levels. In the first study, cross-sectional analyses of nationally representative data will be used to examine the degree to which first- and second-generation youth experience social marginalization and exclusion in the context of US schools. In the second, the propensity to make friends (sociality) and propensity to make friends with someone of a similar background (homophily) are examined to determine the degree to which immigrant generation contributes to the formation of friendship networks above and beyond other known factors, such as gender, race, ethnicity, and grade level. Finally, the third paper will extend the analyses of the third study to look at longitudinal relationships of immigrant generation and language spoken in the home as predictors of friendship formation over time.

Literature Review

The following literature review provides an overview of published research and identifies areas of disagreement with respect to integration and friendship formation for youth from immigrant families. First, theories of acculturation and integration are discussed, with a distinction made between structuralist and culturalist approaches to research on integration. Second, research on the friendship preferences and social networks of immigrant youth are examined. Third, research on the phenomenon of the immigrant paradox is presented, focusing specifically on the research related to peer relationships and outcomes for immigrant youth. Finally, the relationship between friendship preferences, school contexts, and academic outcomes are reviewed.

Theories of acculturation and integration

There is great debate among researchers as to what is actually occurring in the United States over the past few generations with respect to immigration and assimilation. Portes and Rivas (2011) divide the theoretical debate into four camps across two axes: one axis with culturalist vs structuralist perspectives on either pole, and a second axis ranging between optimism and pessimism about the outcomes for immigrants. The culturalists argue from a perspective that defines assimilation primarily in the linguistic and cultural terms - in the words of Alba and Nee, "the decline of an ethnic distinction and its corollary cultural and social differences" (2009, p. 11). While some culturalist researchers argue that fragmentation, rather than assimilation, characterizes the current national context (Huntington, 2004), others are much more optimistic that gradual bi-directional cultural assimilation has characterized much of the history of immigration in the Untied States since its founding and continues to do so today (Alba & Nee, 2009). Among structuralists, researchers have found evidence of segmented or even downward assimilation processes, whereby the immigrant experience, particularly of traditionally marginalized groups, is marked by initial immigrant advantage and followed by subsequent developmental risks with increasing assimilation (Haller, Portes, & Lynch, 2011b; Hill & Torres, 2010) This group of researchers tends to highlight the important ways in which race and ethnicity explain why some groups – like highly-educated immigrant professionals – are able to assimilate into middle-class livelihoods while others – particularly immigrant groups of color and immigrant groups from low-income countries – join an "underclass" marked by poverty and lack of opportunity. On the other hand, researchers point to evidence of integration across a series of social structures,

including educational attainment, intermarriage, residence, and language assimilation (Waters & Jiménez, 2005).

One problem in this area of research is the conceptual and methodological challenge of defining and measuring acculturation and assimilation. As argued by Hunt et al. (2004), inherent to these constructs are assumptions about culture that are largely based in cultural stereotyping and inaccurate representations of what consists of mainstream and non-mainstream cultures. As such, the theoretical approach of this dissertation draws theoretical and conceptual influences largely from those who have taken structural rather than cultural approaches to examine the social phenomenon of immigrant integration. In other words, rather than examining whether immigrant youth adopt "mainstream" US cultural patterns, values, norms, and behaviors, the approach in this dissertation will examine the structural forces that allow immigrant youth to participate fully in the social, economic, and cultural school world, and in turn how these structural forces provide or constrain opportunities for immigrant youth.

Throughout the research literature, acculturation, integration, and assimilation are used at times synonymously and in others used to describe similar but distinct processes. Often, "assimilation" is used to describe the process of a decrease in dissimilarity between host and immigrant cultures in the United States, while European researchers might use "integration" to describe this process (Vermeulen, 2010). For the purposes of this dissertation, "integration" is used to describe the process by which immigrant youth participate with their native US-born peers in the social, cultural, economic, and academic life of their school communities.. Thus, this definition differs from the work of Berry (2013) in that it centers on the structural forces at work in adolescent friendship

networks and avoids the measurement challenges associated with acculturation. The intention of this definition is to emphasize bi-directional exchange, mutual accommodation, and the right for youth from all backgrounds to maintain their cultural ways of life while fully participating in the social world of their school communities.

Racial and ethnic preferences in friendship formation

For immigrant youth, research on the peer environment requires an explicit examination of the ways in which race, ethnicity, language, and culture impact friendship choices, position youth within networks, amplify or constrain access to resources, influence peer health and behaviors, and result in friendship integration or segregation. In general, most research indicates that youth tend to choose friends of similar race and ethnicity, across cultures and contexts - a process known as homophily (Goodreau et al., 2009; McPherson, Smith-Lovin, & Cook, 2001; Moody, 2001b; Shrum, Cheek, & Hunter, 1988; Smith et al., 2014; Vermeij et al., 2009). One of the challenges of research in this area is that friendship choices are made within the contexts of schools, but are constrained by the opportunities for friendships based on the diversity of students in the school. In other words, the study of racial and ethnic preference in schools is dependent on the racial and ethnic composition of classrooms, schools, and neighboring communities. In a study of the effects of neighborhood racial and ethnic composition on in-school preferences, Mouw & Entwistle (2006) found that a third of the variance in racial friendship choices is attributable to neighborhood segregation levels, above and beyond any individual choices made by youth. Additional research indicates that school level factors such as school size and median income level (Currarini, Jackson, Pin, & Papadimitriou, 2010; Moody, 2001b) and grade- and classroom-level structural

boundaries (Leszczensky & Pink, 2015; Valente, Fujimoto, Unger, Soto, & Meeker, 2013) also place constraints on choices. In summary, friendship choices are made within the larger contexts of classrooms, grades, schools, and neighborhoods, each which may amplify or constrain opportunities that in turn impact how friendships are formed.

Research with Add Health Data. Three landmark studies using the 1994-1995 in-school survey from the National Longitudinal Study of Adolescent to Adult Health (Add Health) have explicitly examined racial and ethnic preferences in friendship. Moody (2001b) examined school-level factors that impact friendship segregation, and found that the highest levels of racial and ethnic segregation are found in moderately heterogeneous schools that have a clear divide between two racial or ethnic groups – possibly a result of an "us" vs. "them" culture in two-groups schools. However, the most highly heterogeneous schools with more than two groups tended to have the greatest level of friendship integration. The study also found that structural factors that amplify or constrain contact opportunities across race and ethnicity impact friendship – for example, schools with more highly integrated extracurricular activities or without rigid tracking preferences are more likely to be integrated. This evidence provides some support for contact theory, as originally posited by Allport (1954) (for an updated review of contact theory, see Pettigrew (1998)), which argues that the racial preferences in friendship choices are constrained by the structurally governed opportunities for contact. Comparing the results of Moody's (2001b) work in light of Mouw & Entwistle's study (2006), it is likely that the variance in racial and friendship segregation in Add Health data can be attributed to three separate analytical levels of analysis: neighborhoods, school-level factors, and individual choices among students.

Following Moody (2001b), Goodreau, Kitts, and Morris (2009) used exponential random graph modeling to examine racial and ethnic preferences at the dyadic level (friendship ties). Controlling for the effects of grade and sex on friendship choices, the authors found that White, Black and Asian students exhibit preferences for same-group (i.e. homophily) friendships. Moreover, the network process of triadic closure, in which friends of friends tend to be friends (A is friends with B, B with C, so A is likely to be friends with C) also accounted for many of the friendship choices and amplified the propensity for same-race friendships. Hispanic youth, however, seemed to display more random or dissasortive mixing patterns. Similar to Moody's (2001b) findings, these relationships varied depending on the percentage of students of color in a given school setting. When Whites are in the minority, they tend to form more homogeneous friendships – a finding that suggests greater opportunity for contact may not lead to more inter-racial mixing and that other factors may account for friendship choices. For Black students, however, the relationship was U-shaped: when in the high majority or small minority, Black students are more integrated in cross-racial friendship groups, while when in schools in which Black students compose an intermediate proportion of the population, in-group friendship preferences are higher.

While both Moody (2001b) and Goodreau et al. (2001b) provide a thorough introduction into friendship-based racial segregation in schools, a third body of research from Kao and colleagues highlights some of the limitations of these previous studies and extends the research to further examine the impact of ethnic subgroups and immigrant generation. Kao and Vaquera (2006) found that while race and ethnicity matter in friendship choices, ethnicity is more significant for Hispanics. In other words, Mexican,

Central or South American, Puerto Rican, or Cuban cultural heritage also impacts the formation of adolescent friendships. In a similar study, Kao and Joyner (2006) found little evidence for pan-ethnicity preferences (e.g. Vietnamese youth being just as likely to choose friends of Asian descent as fellow Vietnamese) among Asian nor Hispanic youth, further supporting the claim that ethic preferences continue to play an important role in friendship formation. Moreover, opportunities for contact – though as found by Moody (2001b) do not necessarily lead to greater integration – are still important for friendship choices as youth who have fewer options for same-ethnic friendships tend to make more heterogeneous friendship groups, holding constant the racial composition of the school.

Most US studies that explicitly examine friendship choices have used the robust friendship network data available in Add Health. Three additional studies contribute some nuance to the findings of the previous studies. Research from the field of economics emphasizes the importance of modeling both *choice* – an individual's preferences in friendship selection – and *chance* – the opportunities provided to youth based on structural constraints – in friendship selection (Currarini, Jackson, & Pin, 2009; Currarini et al., 2010). Local position within networks, including the process of course selection, impacts friendship choices and in turn may contribute to inequalities in access to social capital (Frank, Muller, & Mueller, 2013). González, Herrmann, Kertész, & Vicsek (2007) also note that adolescents build more dense groups when members of a minority in a school setting, though there is some asymmetry between Black and White youth: Black minorities in a White majority school tend to form *intra*-group relations, while White minorities in a Black majority school form more homophilous *inter*-group relations. Findings as these suggest that macro factors associated with the social

construction of race in the United States, may in turn impact how friendship formation occurs at the individual level.

Studies of friendship processes. Studies on race and ethnic preference in research studies not using Add Health data extend the basic research identifying whether or not preferences are occurring and in turn aim to clarify the social and developmental processes that might explain preferences. In a study of Asian-American youth, Chen & Graham (2015) found a relationship between intergroup attitudes and cross-ethnic friendship formation, and that spending time with and receiving emotional support from friends was associated with less avoidance of the out-group. The authors also note important ethnic differences: first, for Asian-American youth, academic achievement plays an important role in friendship segregation, suggesting that a combination of choice (choosing friends of a similar academic profile, measured as GPA) and chance (having more opportunities to choose highly achieving students who are tracked into college preparatory/advanced placement classes) may in turn impact opportunities for cross-ethnic friendships. Second, South Asian (i.e. India, Pakistan, Bangladesh) students more likely to have cross-ethnic relationships than other Asians, perhaps due to the history of colonization in the Indian subcontinent that led to shared cultural and linguistic experiences of South Asians and Whites. In a study of youth from immigrant families of Vietnamese descent, Chan and Birman (2009) found that higher diversity in schools might not in fact lead to greater cross-race friendships as youth presented with more opportunities to choose same-race friends, tend to do so. Moreover, acculturation plays an important role for immigrant youth: those who reported higher levels of American acculturation reported greater levels of social support from cross-race friends, while those

with greater Vietnamese acculturation reported greater levels of social support from other Vietnamese. Tropp, O'Brien, and Migacheva (2014) offer similar findings in a study focusing on inclusivity and exclusivity norms in youth friendships: when youth perceive that the social norms of their friends group point towards inclusivity, they tend to form more cross-group friendships. The authors argue that helping youth develop more pro-inclusivity norms in social groups may in turn promote greater racial and ethnic integration in adolescent friendships.

Friendship preferences in Europe. Recent research from outside the United States have also used network-based approaches to ask similar questions regarding the racial and ethnic factors that give rise to friendship preferences. In a study of Dutch secondary school classes, Vermeij, van Duijn, and Baervelt (2009) emphasize the importance of controlling for opportunity: looking just at the number of friends chosen, majority youth tended to discriminate more than minority youth. However, controlling for the fact that there are fewer minority youth in the school, the relationship was in the reverse: minority youth tended to preference same-ethnicity friendships. Additionally, minority youth tended to be more homophilous when embedded within high minority neighborhood contexts. Focusing on the processes of discrimination, friendships among host-national classmates and immigrant youth in Greece were found to prevent feelings of discrimination even when macro-level perceptions of group perceptions exist. Youth might look beyond macro-level perceptions of discrimination if they experience quality friendships at the dyadic level (Reitz, Asendorpf, & Motti-Stefanidi, 2015). In terms of social structure, Windzio (2015) found in a study of the birthday parties of German youth that ethnic segregation among parents can impact child friendship formation. Parents'

same-ethnic preferences in their friendship choices (i.e. whom they chose to invite to their child's birthday party) in turn places constraints on the availability of cross-ethnic friendship choices in their children and increases tendencies toward segregation. In a separate study of youth across 625 classes in England, Germany, the Netherlands, and Sweden, Smith, Maas, and van Tubergen (2014) found that the social and cultural attributes of youth – for example, having similar opinions, having similar religion, or having similar leisure activities – does significantly impact friendship choices, but controlling for these factors racial and ethic preferences remain. In comparison to other studies, Smith et al. (2014) found differences in immigrant friendship preferences based on country of origin: those youth coming from neighboring European countries (e.g. Russia, Poland, and Italy) were integrated much more quickly into school friendship networks than youth from post-colonial countries (e.g. Turks, Surinamese).

The "immigrant paradox" and peer relationships

Given the published literature on racial and ethnic preference in friendship formation, it follows that such preferences may in turn impact outcomes across racial and ethnic groups. For immigrant youth, these preferences may also be related to the "immigrant paradox", which refers to the mounting evidence of an immigrant advantage across multiple indicators for youth. In education, youth from immigrant families outperform their native-born peers in school in academic achievement as well as school enrollment and college attendance (Crosnoe & López Turley, 2011; Crosnoe & Lopez-Gonzalez, 2005; Hirschman, 2001; Keller & Tillman, 2001). Additionally, the process of assimilation is associated with worse health outcomes and greater health risk behaviors, leading some to question whether the process of assimilation might be considered a

developmental risk (Garcia Coll & Marks, 2012). Additionally, immigrant youth consistently engage in less substance use (Kopak, 2012; Lara, Gamboa, Kahramanian, Morales, & Bautista, 2005; Warner, Fishbein, & Krebs, 2010) and report a lower prevalence of depression (Harker, 2001). Sampson, Morenoff, & Raudenbush (2005) found that compared to third-generation/natives, first-generation immigrants are half as likely and second-generation immigrants are three-quarters as likely to engage in violence for all immigrant groups (except for non-Mexican Latinos) – and moreover, living in a neighborhood with a high immigrant population is actually a protective factor against violence. Similarly, another study found that Latino immigrant arrival in traditional receiving communities was associated with a decrease in community violence (C. T. Harris & Feldmeyer, 2013). Nevertheless, the health outcomes of immigrants of all ages are more mixed:. For example, some research suggests immigrants across subgroups are at risk for certain diseases like diabetes, while there is evidence of lower mortality rates and lower rates of obesity across subgroups (Cunningham, Ruben, & Venkat Narayan, 2008). A second study also examined access to health care, finding that Latino immigrants are at greater risk for decreased access to health care (Lara et al., 2005). What is common across these studies is that whether immigrants are better or worse off tends to vary by outcome measure. In comparison to third-generation youth, first-generation youth have less access to health care but engage in healthy behaviors and less violence. Second-generation youth excel in academic achievement and college attendance, but may be at risk for engaging in some risky healthy behaviors.

Recent research has also documented differences across immigrant generation and subgroup. In Mexican-American youth, Crosnoe and Lopez-Gonzalez (2005) found

evidence of a "generational spike", in which academic and health (obesity) outcomes were most troubling among second-generation youth, while first and third-generation youth were better off. The authors found that this spike for academic outcomes is explained by family processes (that is, stressors on family life lead to poorer academic outcomes) while this relationship holds even when controlling for other factors for obesity. These findings suggest that for Mexican-Americans, the heightened challenges and stressors of assimilation in the second-generation may negatively impact family processes and in turn lead to poorer academic outcomes.

The immigrant paradox and school and neighborhood contexts. The etiology of the immigrant paradox most frequently points to school and neighborhood contexts as well as family processes, rather than individual differences between immigrants and their peers, as the factors that best explain the immigrant paradox. In Chinese and Korean youth, Zhou and Kim (2006) found that cultural and structural factors work together to encourage higher outcomes among these youth, while Greenman (2011) found that the immigrant paradox exists only among low SES (defined as percentage of mothers without high school degree) schools. In addition, Driscoll, Russell, and Crockett (2007) argue that parenting styles may impact immigrant generational differences. Using the National Education Longitudinal Study of 1988 (NELS) data, Kao (2004) found that the academic successes of youth from immigrant families are the result of the ways in which immigrant families function – particularly how they converse with their children about their schooling and attending college in the future. Still other studies focus primarily on peer processes, citing same-race and same-ethnicity friendships (Ryabov, 2012), differential susceptibility processes (Dipietro & McGloin, 2012), substance use (Cavanagh, 2007),

and peer social capital (Ryabov, 2009) each helping to explain the immigrant paradox phenomenon. At the heart of these issues is the recognition that social context not only matters a great deal but can explain much of the individual differences in outcomes between immigrants and natives. As argued by Bui in a study of the immigrant hypothesis as related to substance abuse, it may well be due to the fact that youth in immigrant families in turn have children in low-income, segregated social contexts, and that these contexts in turn negatively impact developmental outcomes (Bui, 2012). Still, there is a lack of research that investigates the immigrant paradox from a network perspective and explicitly examines how social inclusion/exclusion may in turn affect developmental outcomes in adolescence.

Friendship choices and academic outcomes of immigrant youth

In general, the majority of highschool age immigrant youth have higher academic outcomes than their native-born peers, though there may be some evidence of "downward assimilation", such that succeeding generations have comparatively worse academic outcomes than recent immigrants (Crosnoe & López Turley, 2011; Hirschman, 2001). Yet less is known about why immigrant youth perform well, and conversely why their native-born peers of similar racial and ethnic background do not. Researchers and practitioners alike have pointed to lack of educational standards, differential access to resources, neighborhood and contextual factors, family processes, and poverty – among a host of other factors – to account for disparities in academic achievement across race, ethnicity, and immigrant generation, and these disparities often differ by immigrant group of origin. While each of these factors likely play an important role in explaining individual differences in these outcomes, recent research has given attention to the role of

peer friendship networks. Peers provide an important social context for adolescent development (Steinberg & Monahan, 2007), and may in turn have an influence over the social, behavioral, and academic development of youth.

Social support and academic outcomes. Studies have demonstrated that peer friendships can provide a source of social support, reinforce positive attitudes toward school, and in turn increase the academic achievement of youth (J. Allen & Antonishak, 2008; Gándara, O'Hara, & Gutiérrez, 2004; Li, Doyle Lynch, Kalvin, Liu, & Lerner, 2011; Stanton-Salazar & Urso Spina, 2005; Wentzel, 2014). Conversely, a different line of research has linked peer relationships to deviant behaviors (Dishion & Tipsord, 2011), substance use (Balsa, Homer, French, & Norton, 2011; Huang, Soto, Fujimoto, & Valente, 2014; Mercken, Steglich, Sinclair, Holliday, & Moore, 2012), and other negative developmental outcomes, which in turn can negatively impact academic achievement. Regardless of outcome, developmental researchers have demonstrated that this link between the health, behaviors, and outcomes of youth and those of their peers is strongest in middle to late adolescence (Li et al., 2011; Steinberg & Monahan, 2007), suggesting that youth may be particularly susceptible (or, conversely, influential), during their adolescent years.

Friendship, social position, and academic outcomes. Peers can provide a source of social and emotional support for immigrant youth, which in turn can promote academic achievement, particularly if those peers come from similar cultural backgrounds (Suárez-Orozco, Pimentel, & Martin, 2009; Ueno, 2009). Among Asian-American students, co-racial friendships play an important role in promoting academic achievement and educational attainment across the life-course (Ryabov, 2012). Close,

reciprocated relationships among females and Asian youth are positively associated with academic achievement independent of and in addition to school connection (Vaquera & Kao, 2008). Social position may also impact academic achievement – for example, Calvó-Armengol (2009) found that more popular and centrally positioned adolescents were more likely to have higher educational outcomes. Thus, there seems to be a relationship between the quality of friendships as well as the social position of youth. What remains unclear is how the overall net positive effect of being an immigrant interacts with the potential negative effect of social marginalization that immigrant youth may experience.

School culture and academic outcomes. Above and beyond friendship quality and social position, the racial and ethnic composition of the school environment also plays an important role in the academic achievement of culturally and linguistically diverse youth. Georgiades, Boyle, and Fife (2013) found that the higher the percentage of students in the school reporting the same immigrant generation, race, and ethnicity, the fewer emotional and behavioral problems were present for most subgroups. Drawing from Putnam's notion of "bonding" capital (2000), which refers to the social capital gained when developing relationships with others of similar social, cultural, and economic backgrounds, it is clear that co-ethnic friendships are important for providing youth with the social support and identity formation that may then lead to improved outcomes. Bonding relationships may also be protective for immigrant youth, especially given that immigrant youth located on the margins of adolescent social groups might be at higher risk for peer victimization (Hong & Espelage, 2012). What is most challenging in this area of research is parceling out the benefits of bonding social capital with the

overall benefit of racial, ethnic, and cultural integration. At what point do bonding relationships become too insulating? Conversely, at what point does integration erode the intra-ethnic social bonds necessary for positive identity development of culturally and linguistically diverse youth?

Peer influence processes. In addition to friendship quality, social position, social support, and culture, research suggests that direct peer influence processes may also impact the educational outcomes of immigrant youth. Studies of peer influence processes of academic achievement (Flashman, 2012), achievement motivation (Nelson & DeBacker, 2008), and prosocial behaviors (Wentzel, Filisetti, & Looney, 2007; Wentzel, 2014) suggest that peer influence processes play an important role in explaining variation in youth education outcomes. Still, less research focuses on these processes from a lens that examines explicitly the impact of culture, ethnicity, and immigrant generation. Focusing on Latino youth, Gándara et al. (2004) summarize three important findings: 1) peer influences of risky behaviors place students at risk for lower achievement, 2) the desire to "peg" ones behaviors with the norms of a social group may put students at risk, particularly if those norms are not congruent with school success, and 3) creating a sense of belonging can increase student engagement in school, which in turn promotes academic achievement. What is unique among Latino students is that structural barriers in peer networks may limit students' access to broader information networks and the social capital that offers access to teachers and other adults at the school (Gándara et al., 2004; Stanton-Salazar, 2004).

Ogbu and Forham's notion of oppositional culture and the "burden of acting White" may also contribute to the study of peer networks and academic outcomes for

immigrant youth. The primary argument made by the authors is that Black students do not aim to achieve good grades because doing so may appear as though they are "acting White" (Fordham & Ogbu, 1986; Ogbu, 2004). Immigrant youth and youth of color may be disproportionally susceptible to "stereotype threat", or bearing the risk of confirming a negative stereotype about one's cultural group (Steele & Aronson, 1995; Steele, 2011). This theoretical frame has important implications for immigrant youth of color, who may encounter the conflicting narratives of an American dream brought about by educational achievement and the contrasting paradigm of success as a sign of having abandoned one's own ethnic identity. Still, research in this area seems highly contextual, as immigrant youth still tend to achieve at higher rates than their native-born peers (Crosnoe & López Turley, 2011; Garcia Coll & Marks, 2012). For example, in a single-school case study of the intersection of race, social context, and academic achievement, Somali immigrants were not "burdened with acting White", and high-achieving Somali students were also highly popular. The authors believe that an explicit school culture supporting academic achievement may have been able to counteract cultural cues that discourage academic success (M. Lee, Madyun, Lam, & Jumale, 2014).

Research Approach

The analyses in this dissertation are divided into three empirical papers. The primary goal of the first paper is to examine the degree of inclusion or exclusion experienced by immigrant youth in school settings. Using the wave I in-school sample, multilevel regression analyses (two-level, individuals within schools) predicting integration at the dyadic, network, and school levels are used to compare the social position of first, second, and third-generation youth, controlling for relevant covariates.

The paper follows a similar analytic approach to South and Haynie's (2004) work on the social marginalization of mobile adolescents, and statistical analyses will be conducted using Stata 14.

The second paper examines whether and how immigrant generation contributes to the formation of friendship networks above and beyond other known factors, such as gender, race, ethnicity, and grade level. Exponential random-graph modeling (ERGM) is used to examine two network processes: the propensity of a youth with a particular characteristic to make friends (sociality) and propensity to make friends with someone of a similar background (homophily). This paper extends the analyses in the first paper to examine how sociality and homophily processes – particularly for youth from immigrant families – account for the formation of friendship networks. An example question from these types of analysis would include whether youth prefer to choose friends of similar immigrant generation, or whether first or second-generation youth are more or less likely to form out-group friendships. The advantage of the ERGM approach as compared to the first paper is the unique ability to account for the assumed dependence of network data. The paper will follow a similar analytic approach to the work of Goodreau et al. (2009), and uses the ERGM package available in R (Hunter, Handcock, Butts, Goodreau, & Morris, 2008).

Finally, the third paper extends the analyses in the second paper to look at longitudinal relationships of immigrant generation and language spoken in the home as predictors of friendship formation over time. First, cross-sectional ERGM models are conducted across three waves of panel data (using a similar strategy as the second paper) to examine the factors that account for network formation at three different time points.

Next, a stochastic actor-based model (Snijders, van de Bunt, & Steglich, 2010) are used to examine how immigrant friendship networks change over time with respect to friendship choices on race, ethnicity, immigrant generation, and language, taking into consideration the network processes that might also account for friendship formation, such as reciprocity and social closure. Analyses are conducted using the ERGM (Hunter et al., 2008) and RSiena (Ripley, Snijders, Boda, Vörös, & Preciado, 2016) package available in R. Because the data require both a large number of immigrant youth and data from two waves, only one school from the Add Health dataset meets the requirement for this paper and will be used for this study. This study will follow a similar approach to Goodreau et al.'s (2009) analysis of exogenous and endogenous predictors of friendship formation in youth networks as well as Flashman's (2012) analysis of the role of academic achievement in predicting youth friendship choices with Add Health data.

Chapter II: The integration of immigrant youth in schools and friendship networks

Abstract

This study examines the degree to which immigrant youth are integrated in school settings at the dyadic (friend-to-friend), network (popularity, centrality, social status), and institutional levels (connection to school, extracurricular activities). The study includes 43,123 youth across 63 schools with immigrant populations from the 1994-1995 Wave I in-school survey of the National Longitudinal Study of Adolescent to Adult Health (Add Health). Results indicate that second-generation youth were more integrated at dyadic and network levels, while first-generation youth experienced some exclusion in friendship networks. First-generation youth tended to be more integrated through school structures (e.g. extracurricular activities) than their second-generation and native counterparts. The association between friendship groups, school composition, and integration was moderated by immigrant generation, suggesting that these social structures function differently for immigrant youth in comparison to their native peers. Results highlight the need for schools to consider processes of immigrant integration across dyadic, network, and institutional levels.

Introduction

Immigrant integration describes the bi-directional phenomenon whereby immigrant groups and their native counterparts become more similar (Alba & Nee, 2009; S.K. Brown & Bean, 2006; Waters & Gerstein Pineau, 2015). Often implied in this argument is that greater integration is associated with greater equality of opportunity among immigrant groups and native societies (Waters & Gerstein Pineau, 2015). While integration can lead to improved outcomes for immigrant groups, it may also leave some groups faring worse, depending particularly on the nature of the wellbeing of the group in the home country and upon arrival in the United States (Garcia Coll & Marks, 2012). Nevertheless, integration remains a social, political, and cultural ideal as greater integration signals consistency with values of fairness, equal opportunity, and parity across racial and cultural groups.

Integration has broadly been understood in both cultural and structural terms. Cultural integration, occasionally referred to as assimilation or acculturation, generally refers to the gradual reduction in differences across cultural values, norms, and behaviors between immigrant and native groups (Berry, 2013). Studies of cultural integration might examine, for example, how the weight gain of immigrant groups becomes more similar to native groups (Jackson, 2011), or how cultural factors like food and language or even psychological factors become more similar between groups (Berry & Sabatier, 2010). However, some have argued that measuring acculturation and cultural behaviors faces significant methodological challenges and reinforces stereotyping (Hunt et al., 2004). In contrast to culturalist approaches, studies of structural integration focus on equal access to resources and equal opportunity of participation for immigrant

communities in the social, political, and economic life of a host society. Research in this arena is further split by those who cite the successes in educational attainment, intermarriage, residence, and language for immigrant groups (Waters & Jiménez, 2005), and those who cite evidence of downward assimilation, whereby race and ethnicity function to privilege some immigrant groups with eased integration into the middle class mainstream while leaving others to join an "underclass" marked by poverty and lack of opportunity (Haller et al., 2011b; Hill & Torres, 2010). Both structuralist and culturalist approaches to studying integration refer to the reduction in differences between native and immigrant groups. What makes these approaches unique is that culturalists refer to the reduction in the differences of norms, behaviors, and culture between immigrant and native groups, while structuralists focus on the reduction of differences in both the participation of native and immigrant groups in social institutions and practices (e.g. intermarriage, neighborhood residence, voting) as well as parity in both opportunity and outcomes for events (e.g. education and employment) across the life course.

This study approaches structural integration by drawing on ecological theory of human development, social cognitive theory, social interaction, and network theory. Immigrant and native youth are understood to engage in peer friendships which are understood to represent a bi-directional proximal process of individual youth interacting with their social environment and in turn shaping their development over the life course (Bronfenbrenner & Morris, 2006). Immigrant youth are also understood to be rational actors engaged in processes of choice and exchange with others (Bandura, 2006; Blau, 1964; Coleman, 1994), whose choices are in turn constrained by social structures and random events.

Integration of immigrants in US schools

In school settings, integration has largely been defined by the prolonged history of racial and ethnic segregation in the United States and the legacy of Jim Crow. Following post-Civil War Reconstruction, schools in the United States were segregated by race through explicit *de jure* state and local laws and policies or through less explicit *de facto* racial segregation. The "separate but equal" legacy of the *Plessy vs. Ferguson* Supreme Court case led to legalized segregation across social institutions – though conditions for individuals and communities of color were consistently inferior to those for White Americans. In 1954, the *Brown vs the Board of Education* case recognized the inherent inequality in "separate but equal" and abolished racial segregation in schools across the country, marking a pivotal point in the Civil Rights era of 1950s and 1960s America.

While the *Brown* decision promised equal opportunity and access through school integration, persistent gaps in achievement between White students and students of color remain today (Kao & Thompson, 2003; Ladson-Billings, 2006; J. Lee, 2002). And while some progress had been made in increasing racial and ethnic integration in schools, integration has been on the decline in the wake of the abandonment of integration programs by state and local school districts in the late 80s and 90s (Orfield & Frankenburg, 2014). This recent decline is marked particularly by the increased segregation of Latino youth from immigrant family backgrounds in the American western states (Orfield & Frankenburg, 2014). Coupled with the increased attendance of hyper-segregated schools by Latino students from both immigrant and native families is an increasing awareness of a "Latino Education Crisis", illustrating gaps in achievement and outcomes for Latino youth compared to their peers (Gándara, 2010, 2015). Research

from across the Western world also suggests gaps between the achievement of immigrant youth from low-income countries and their peers and point to factors such as school tracking and inequality in school systems (Alba, Sloan, et al., 2011; Lichter, 2013) as factors that may exacerbate these gaps. Such trends highlight links between school integration and student achievement and indicate that school integration and the reduction in the achievement gap is a shared struggle held by immigrants and communities of color alike. Indeed, this struggle weaves together the intersecting legacies of race, ethnicity, and migration in the story of integration and academic achievement.

What is perhaps ironic is that segregation and gaps of achievement persist despite the fact that the United States is becoming an increasingly non-White and immigrant country (Taylor, 2014). Indeed, this growth in school segregation questions the assumption that increased diversity necessarily leads toward greater social, political, and economic integration, and suggests that integration and greater equality will only come with public action and investment (Lichter, 2013). Consequently, it is imperative that societies find mechanisms to promote policy efforts that successfully bring about the integration of immigrant youth in school communities, particularly those youth from low-income, low-resource countries of origin (Alba, Sloan, et al., 2011; Lichter, 2013).

Some research in this areas has focused on linking desegregation efforts to youth wellbeing across socioeconomic, racial/ethnic, and cultural lines. Overall, for example, school desegregation tends to improve academic outcomes for minority youth while not reducing outcomes for majority youth (Linn & Welner, 2007). Desegregation may also lead to improved intergroup relations, with long-term benefits of racial tolerance and inclusion that extend even into adulthood (Linn & Welner, 2007). Older meta-analyses

examining the achievement outcomes of desegregation programs cite between .2 and .3 standard deviation increases in Black student achievement as a result of desegregation policies (Crain & Mahard, 1983; Wortman & Bryant, 1985). More recent research suggests that integration of immigrant youth may also lead to positive outcomes for these youth, though these effects may be lower than for integration of Black youth in the US (van Ewijk & Sleegers, 2010).

Studies of school desegregation, however, tends to look at school-level racial and ethnic composition and access to education, but do not examine whether the change in the composition of a school leads to social and cultural integration. Within-school research tends to demonstrate that desegregation efforts at the school and district levels fail to adequately ensure that the same processes of segregation are not occuring within the school through structures like classroom and extracurricular activity composition (Alba, Sloan, et al., 2011; Lucas & Berends, 2007; Okamoto, Herda, & Hartzog, 2013).

In addition to this research in school desegregation, recent research on immigrant integration in school and community settings has focused on factors such as school composition (Goosby & Walsemann, 2012; Walsemann, Bell, & Goosby, 2011), parent involvement (Kuperminc, Darnell, & Alvarez-Jimenez, 2008; Reynolds, Crea, Medina, Degnan, & McRoy, 2015), cultural practices in the home (Fuligni, 1997; Kao, 2004), and extracurricular activities (Okamoto et al., 2013). However, much less research has examined the association of immigrant generation as a factor that works independently of and alongside race/ethnicity on the integration of immigrant youth in adolescent peer networks. The primary goal of this study it to address the gap in the literature and examine the integration of immigrant youth in peer networks and school environments.

Integration and peer friendships

Situated within these larger demographic trends and theoretical debates, there is increasing interest among social scientists in the processes that lead to integration within schools among adolescent peer friendship networks and within school social structures. Peer relationships provide an important social context for adolescent development (Steinberg & Monahan, 2007), and can provide insight into the ways in which race, ethnicity, immigrant generation, and language all play a role in how friendships are formed. While many studies of integration focus on school-level indicators of integration (e.g. percentage of students of color in majority-White schools) (Goosby & Walsemann, 2012; Orfield & Frankenburg, 2014; Stroub & Richards, 2013), recent developments in the science of network analysis provide a new methodological approach to the study of social integration to examine integration *within* schools, at the dyadic, network, and institutional levels (Cherng, Turney, & Kao, 2014; Houtte & Stevens, 2009; Moody, 2001b).

Dyadic integration

One method of studying integration is to examine individual, peer-to-peer friendships among youth. Research suggests that friendship can provide social support (Stanton-Salazar & Urso Spina, 2005), protect against anxiety (La Greca & Harrison, 2005) and depression (Ueno, 2005), encourage achievement motivation (Nelson & DeBacker, 2008) and promote academic achievement (Wentzel & Caldwell, 1997), often through encouraging greater connection to school and motivation for learning. Youth higher in sociality (the propensity to nominate friends and be nominated as a friend) may

in turn be associated with improved outcomes over the life course (Umberson, Crosnoe, & Reczek, 2010).

A number of studies have indicated disparities in sociality across racial, ethnic, and socioeconomic lines. Hispanic students nominate fewer friends and are less likely to nominate a best friend compared to their non-Hispanic White peers (Vaquera, 2009), and those who do report having more friends also report higher school belonging and fewer engagement problems, like having trouble paying attention or getting homework done. In addition, Black, Hispanic, Asian, and Native American youth are each less likely to have reciprocated friendships in comparison to their White peers, and across all groups females are more likely than males to have reciprocated friendships (Vaquera & Kao, 2008).

Studies outside the US have confirmed similar experiences of exclusion among immigrant youth in Canada (Steinbach, 2010). In a study of the socioeconomic predictors of friendship formation, Hjalmarsson and Mood (2015) found that poorer youth tend to report fewer friendships and receive fewer friendship nominations, perhaps related to fewer opportunities to participate in school extracurricular activities. Similarly, youth who have recently moved to a new school have fewer friendships, fewer best friends, and are less likely to have a reciprocated best friend (South & Haynie, 2004). The common implication of the above studies seems to be that youth who are on the social margins with respect to race, ethnicity, social class, and outsider status, tend to nominate fewer friends, have weaker, less-reciprocated friendships, and are more likely to be isolated.

Network integration

Research has also examined social position within a network (e.g. how central or popular one is) to capture integration. Recent studies on youth networks in the Netherlands (Vermeij et al., 2009), Germany (Leszczensky & Pink, 2015; Windzio, 2015), and across Europe (Smith et al., 2014) have examined network factors that explain youth friendship patterns as related to ethnicity and immigration, with findings across the literature indicating at least some degree of social marginalization of immigrant youth. In the United States, Moody (2001) examined school-level factors that impact friendship integration, and found that the lowest levels of racial and ethnic integration are found in moderately heterogeneous schools that have a clear divide between two racial or ethnic groups – possibly a result of an "us" vs. "them" culture in two-groups schools. Similarly, Goodreau, Kitts, and Morris (2009) found that White, Black and Asian students exhibited preferences for in-group (i.e. homophilous) friendships, but that Latinos were less racially homophilous. Moreover, the network process of triadic closure, in which friends of friends tend to be friends (A is friends with B, B with C, so A is likely to be friends with C) also accounted for many of the friendship choices and amplified the propensity for same-race friendships (Goodreau et al., 2009). Similar to Moody's (2001) findings, these relationships varied depending on the percentage of students of color in a given school setting. Furthermore, Goodreau et al. (2009) found that when Whites are in the minority, they tend to form more homogeneous friendships – a finding that suggests greater opportunity for contact may not lead to more inter-racial mixing and that other factors may account for friendship choices. For Black students, however, the relationship was U-shaped: when in the high majority or small minority, Black students are more

integrated in cross-racial friendship groups, while Black students in schools compose an intermediate proportion of the population, in-group friendship preferences are higher. These findings highlight both the micro/mezzo factors at the dyadic and network level within schools that impact the social integration of youth.

Institutional integration

Studies examining institutional integration within schools tend to focus on equity of the participation of youth in school activities, including access to advanced and specialized courses (tracking), participation in extracurricular activities, and general school engagement. In existing studies, what unites these efforts is the examination of integration in school activities *within*, rather than *across* schools (Goodreau et al., 2009; Lucas & Berends, 2007; Okamoto et al., 2013; Schaefer, Simpkins, Vest, & Price, 2011). Previous research has examined integration within institutional social structures by studying tracking patterns within schools, often citing how low-income students of color tend to be tracked into lower-performing classes that are not designed to prepare students for college (Alba, Sloan, et al., 2011; Lucas & Berends, 2007). Moody (2001b) has also argued that such tracking practices may in turn have impacts on friendship integration, such that low-income students of color are more likely to develop friendships with students of similar backgrounds tracked into the same classes. Alba, Sloan, and Sperling (2011) similarly noted that tracking systems may be a particular barrier to integration for immigrant youth, as immigrant parents may lack the cultural capital required to navigate tracking systems to favor their child's academic and social success.

Extracurricular activities play an important role in friendship formation above and beyond the effects of homophily and network processes (Schaefer et al., 2011). Using

data from the 2002 Educational Longitudinal Study (ELS), Cherng, Tourney, and Kao (2014) found that racial and ethnic minority groups, as well as first- and second-generation youth, are less likely to have friends or socialize with others, but that these youth were no less likely to participate in school activities like sports and other extracurricular activities. Other studies have focused on school racial and ethnic composition as a factor that may constrain participation in extracurricular activities. For example, Okamoto (2013) found that immigrant minority youth who are in high-SES schools, with high percentages of immigrant and non-White students, tended to participate in extracurricular activities at higher rates than lower SES or primarily White schools. Common across these studies is the recognition that the social structures within schools, including classrooms and extracurricular activities, have a bi-directional relationship with friendship formation that may impact the integration of youth across cultural and linguistic lines.

Same- and cross- culture friendships

A large area of research has also focused on same- and cross- culture friendships. Such research is often challenged both by the desires for and potential benefits of cross-cultural friendship integration while recognizing the importance of identity formation and social support provided by same-culture friendships (Georgiades et al., 2013; Graham, Munniksma, & Juvonen, 2014; McGill, Way, & Hughes, 2012). Two broad trends are consistent across studies in this area. First, youth tend to form more same-culture friendships that are stronger and more stable over time than cross-culture friendships (Aboud, Mendelson, & Purdy, 2003; Kao & Joyner, 2004; Rude & Herda, 2010; Vaquera & Kao, 2008). Best friends tend to be of same ethnicity and share similar activities (Kao

& Joyner, 2004), while interracial friendships are less likely to be reciprocated than intraracial friendships (Vaquera & Kao, 2008). Studies that have examined differences across racial and ethic lines are more mixed, with some groups reporting greater cross-friendships in one study and not in another (McGill et al., 2012; Quillian & Campbell, 2003). However, a trend across a number of studies indicates that when making cross-culture friendships, Asians and Whites tend to nominate each other while Blacks and Latinos tend to nominate each other on the other (Chen & Graham, 2015; Kao & Joyner, 2004; Quillian & Campbell, 2003).

The second broad trend across these studies shows that school-level factors tend to impact friendship choices. In a study of integration in Dutch schools, Houtte and Stevens (2009) found that a greater the proportion of immigrants in a school was associated with a greater likelihood of cross-ethnic friendship. Studying US adolescents, Quillian and Campbell (2003) found that though cross-race friendships generally increase in schools with greater diversity, same-race friend selection intensifies for students of small racial minorities (Quillian & Campbell, 2003). Across all studies, race and ethnicity tend to be the primary drivers of the discussion of friendship formation, while immigrant generation tends to play a contributing but less prominent role.

Theoretical Framework

The purpose of this study is to examine the association between immigration and integration in schools through adolescent friendship networks and school institutional structures. The theoretical framework outlined in Figure 1 can be summarized by two primary goals of this study. First, the main effect relationship of immigrant generation on dyadic, network and institutional integration is examined. Second, immigrant generation

is tested as a potential moderator of race/ethnicity, friend group, and school factors in predicting integration. Guided by this model, four specific research questions are proposed:

1. How are a) race/ethnicity, b) immigrant generation, and c) friend groups, associated with the integration of immigrant youth in friendship networks??
2. Does immigrant generation moderate the relationships between a) race/ethnicity, b) friend groups, and c) school factors, and the integration of immigrant youth?

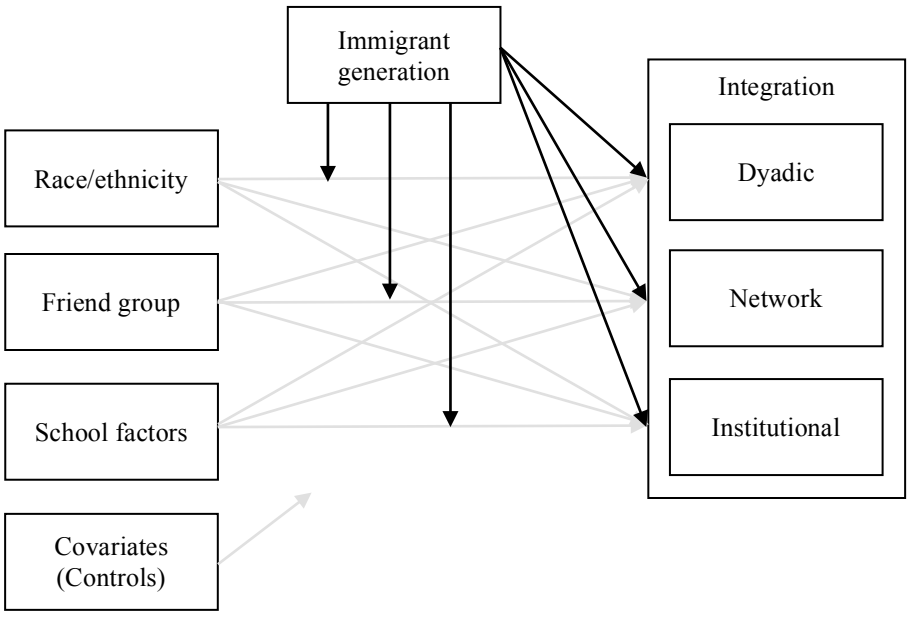

Figure 2. Theoretical model of immigrant integration in schools.

Methods

The participants in this study were drawn from the National Longitudinal Study of Adolescent to Adult Health (Add Health), a stratified longitudinal study of adolescents in grades 7 through 12 during the 1994-1995 school year. In-school surveys were

administered to 90,118 adolescents in over 140 schools capturing basic information about adolescent health and behaviors. This dataset is uniquely suited to answer questions of integration in friendship networks because friendship network data are captured at each school: students were asked to nominate up to five male and five female friends, and these nominations were then used to re-construct the adolescent's social network. Data are drawn from the wave I in-school questionnaire, in-school friendship nominations, in-school network constructed variables, and the school data file. Data were excluded if they 1) were missing an individual identifier, 2) were missing a school identifier, 3) were single-sex schools, 4) were associated with schools with lower than a 75% survey completion rate, and/or 5) were associated with schools where less than 5% of the school population was from an immigrant family. The fourth criterion is required to ensure reliable estimates of network measures based on data collected from friendship nominations, as missing data can bias network-based measures (Borgatti, Carley, & Krackhardt, 2006; Costenbader & Valente, 2003). Rather than defining a cutoff for all network studies, Constenbader and Valente (2003) recommend looking to similar studies to see what expectations are for handling missing network data in the area of interest. The choice of 75% follows a strategy similar to studies by Moody (2001b) and Schaefer, Simpkins, Vest, and Price (2011). In addition, the fifth exclusion criterion is included to ensure unbiased immigrant generation parameter estimates that would result if schools with too few immigrant youth were included.

Initially, 4,491 cases were removed for missing individual and/or school identifiers, 9,934 were removed for missing a school identifier, and 43 students for missing school data, with the sample reduced to 75,871. Of these, 2,808 students from 20

schools were removed where fewer than 75% of the students completed the in-school questionnaire. An additional 18,086 cases from 44 schools were removed that have an immigrant population lower than 5%, and additionally 1,854 cases not included in the sample weighting were removed. The final sample includes 43,123 adolescent youth in 63 schools. Additional missing data on individual attributes are handled using multiple imputation in Stata 14 (Gelman, Carlin, Stern, & Rubin, 2004; Schafer, 1997).

Included schools are representative across four major regions of the United States (West, 25%; Midwest, 14.%, South, 33%; Northeast, 19%). On average, first-generation students comprised 6.89% (SD 9.50) and second-generation students comprised 12.68% (SD 9.15) of the student population. As schools with fewer than 5% of an immigrant population were excluded from the analytical sample, study schools tended to have higher averages of immigrant youth and youth of color in comparison to the full sample. The average school size was 923 students (SD 717), though there was great variation in school size within the sample (range 30, 3334).

Measures

Demographic variables include those relating to the cultural and socioeconomic factors known to be associated with study outcomes. Gender is measured as a binary variable (1=female), while age (ages 10-19), grade level (6-12), and years at the school (1-6) are measured as integer or count variables. Mother and father education levels were determined based on adolescent respondents to the question, “How far in school did he/she go?”, with responses recoded into three dummy variables: less than high school, high school and/or GED, and some college education, with less than high school serving as the reference group.

Race and ethnicity are measured as follows. First, adolescent youth are assigned a value in one of the five categories (mutually exclusive): White, Black, Asian, Hispanic (non-White), and Native American/Other. All Hispanic youth are assigned to the Hispanic category, regardless of race, while those who report mixed status are recorded in "Other". Next, a second set of dummy variables (0/1) are constructed to allow for the potential overlapping of racial and ethnic categories during particular points in the study analysis. This approach follows a similar coding scheme to other studies that explicitly model race and ethnicity using Add Health data (Greenman, 2011; G. Kao & Joyner, 2004).

Immigrant generation is determined using the birthplaces of the parents and children participants. Foreign-born youth with parents born outside the US are considered first-generation, native-born youth with both parents foreign-born are second-generation, and third-generation are included with the native population (Greenman, 2011; Okamoto et al., 2013). Because Add Health data do not provide information on the length of time spent in the United States since arrival, further analyses of 1.5 or 2.5 generations is not possible. For regression analyses, male, white, third-generation/native youth compose the reference group.

Study covariates. Study covariates include measures of risky behaviors, physical health, depression and anxiety, school connection, self-esteem, and extracurricular activities. These in-school questionnaire measures are similar to those validated by resaerch examining the validity of these measures in the in-home sample (Sieving et al., 2001). Risky behaviors are measured using six items (α=.76) that focus on behaviors that place youth at risk for negative health and behavioral outcomes. A sample question is

"During the past 12 months, how often did you get drunk?" Physical health (α=.78) was measured using eight items related to overall poor physical health – for example, "In the past month, how often did you feel really sick?" Mental health was measured using a reduced number of items (7) from the Center for Epidemiological Studies – Depression scale (CES-D) (α=.83) (Perreira, Deeb-Sossa, Harris, & Bollen, 2005), with questions similar to "In the past month, how often did you feel depressed or blue?". School connection was measured using a Likert agreement of five items (α=.79) focusing on school connection (e.g. "I feel close to people at this school"). Self-esteem similarly was measured on a Likert scale of eight items adapted from the Rosenberg self-esteem scale (1965) focusing on perceptions of oneself (α=.86) (e.g. "I have a lot of good qualities). Finally, extracurricular activates was measured as a count of a series of yes/no questions asking the participant to report whether or not he/she participated in a type of activity, including sports, clubs, academic activities, and other common school-based extracurricular activities.

Dependent variables. The outcome of interest in this study is integration, which is divided into dyadic friendship integration, network integration, and institutional integration. While most of these measures are based on network data derived from friendship nominations, some measures examine integration into school structures and activities. Dyadic friendship integration refers to integration at the friendship level, and is measured with three variables. The first two measures are indicators of nominating a best friend of the same gender (male/female). Those who have best friends are coded (=1) and those without are coded (=0). The third measure is a measure for isolates,

which include those youth who neither nominate another youth nor receive a nomination from another youth.

Network integration uses sociometric measures to examine to the degree of inclusion or exclusion within peer friendship networks, and is used in this study to approximate social phenomena such as popularity, centrality, social status, and density. Popularity is measured by in-degree, or the total number of friendship nominations one receives. Centrality refers to the social position of an adolescent, taking into account not only one's friends but also the relative centrality of those friends. The sociometric measure of Bonacich Power (1987) is used to approximate centrality and weights a student's centrality based on the centrality of the students' friends. Finally, proximity prestige measures an ego's social status influence relative to the number of people in the network who can reach the ego (Wasserman & Faust, 1994). Higher proximity prestige indicates more social status, and lower prestige lower status. Youth who are isolates (those who do not nominate friends and are not nominated) are missing on prestige. Finally, density indicates the proportion of ties among nodes in comparison to all available ties – that his, how "clumpy" or well connected a network is. Youth in dense networks tend to have friends that are friends with one another, while youth in less dense networks have friendships that are not so tight-knit.

Lastly, structural integration refers to a youth's integration into the various social structures that compose the school environment, and are measured with three constructs: school connection and participation in extracurricular activities. Both school connection and extracurricular activities are used as both a covariate and outcome variable in this study (see section "covariates").

Analysis

Survey-weighted regression models are developed to examine the link between immigrant generation and integration into adolescent peer friendship networks, controlling for the complex survey design presented in Add Health (K. Harris et al., 2009). Three strategies are used to develop the regression models. For dyadic integration (best friend and isolate) dependent variables, logistic regression is employed. For network integration, two model types are included: first, negative binomial regression is used to model the count variable of number of friendship nominations, while standard ordinary least squares (OLS) regression is used for measures of centrality, social status, and density. Finally, OLS regression is also used for structural integration variables school connection and extracurricular activities. The analytical approach taken in these analysis is similar to the work of South and Haynie's (2004) study of mobile adolescents also using Add Health data.

A challenge of network-based research is making meaningful comparisons of network measures across different school networks. Network measures by their definition are relative, such that one is only more central or has more social status relative to another youth in their school. Thus, the absolute value of a youth's centrality in one school is not comparable to that of another. To address this challenge, dependent variables for continuous outcomes centrality, social status, school connection, and extracurricular activities were standardized and group-mean centered such that the value represents the relative integration in comparison to peers *within the same school*. Because of the binomial and count distributions for friendship nominations (popularity), best friend, and isolate outcomes, these measures were not standardized and represent the

absolute value of each respective measure in the school – which provides a potential limitation to the findings, as students in larger schools may be more likely to receive more nominations.

Results

Table 1 presents descriptive statistics of the study sample and summarizes differences in study variables across first, second, and third-generation/native youth. First-generation youth tended to be older ($p<.001$), had spent fewer years at the school ($p<.001$), had lower maternal education rates ($p<.001$), and participated in fewer extracurricular activities ($p<.001$) in comparison to second and third-plus-generation youth. However, they also reported improved physical ($p<.001$) and mental ($p<.001$) health and participated in fewer risk behaviors ($p<.001$), consistent with previous literature examining the "immigrant paradox" on these outcomes (Bui, 2012; Crosnoe, 2012; Mendoza, 2009; Salas-Wright et al., 2015). Generally, second-generation youth were more similar to their third-generation peers on study covariates.

There were also important differences on measures of integration. Figure 2 extends the analysis to examine differences across immigrant generation and race/ethnicity. In general, first-generation youth tended to be less popular ($p<.001$), less central ($p<.001$), and have less social status ($p<.001$) than their second and third-generation peers. However, among second-generation Asian and Hispanic youth, second-generation youth were more central ($p<.001$) and had higher social status ($p<.001$) in comparison to their first and third-plus generation peers. In addition, while first- generation immigrant youth were less likely to nominate a best friend ($p<.001$) and were more likely to be isolates than their peers ($p<.001$), second-generation Hispanic

Table 1: Study variables by immigrant generation, with ANOVA comparisons

	3rd + generation		2nd generation		1st generation		Total			
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	*F*	N
Age	14.91	1.73	14.89	1.7	15.53	1.71	14.96	1.73	246.49***	43448
Gender (Female)	0.51	0.5	0.52	0.5	0.5	0.5	0.51	0.5	0.71	43297
Grade	9.53	1.62	9.62	1.62	10.03	1.54	9.59	1.62	174.36***	43310
Years in school	2.47	1.38	2.44	1.34	2.34	1.22	2.45	1.36	16.61***	43443
Mother's education < HS Degree	0.08	0.27	0.22	0.41	0.28	0.45	0.12	0.32	824.21***	35721
HS Degree	0.36	0.48	0.28	0.45	0.22	0.42	0.34	0.47	171.28***	34807
College +	0.55	0.5	0.48	0.5	0.45	0.5	0.53	0.5	77.69***	34807
Hispanic	0.12	0.32	0.47	0.5	0.57	0.49	0.21	0.41	4162.69***	38758
Black	0.18	0.39	0.07	0.26	0.04	0.19	0.15	0.36	472.65***	43206
Asian	0.04	0.19	0.26	0.44	0.34	0.47	0.09	0.29	3483.56***	43206
Other	0.12	0.33	0.25	0.43	0.28	0.45	0.15	0.36	593.17***	43206
% friends same generation	0.73	0.41	0.24	0.3	0.32	0.37	0.63	0.44	5183.50***	43461
% friends same race/ethnicity	0.64	0.41	0.52	0.42	0.55	0.44	0.62	0.42	251.81***	43106
Extracurricular activities	2.14	2.42	2.19	2.72	1.83	2.45	2.12	2.47	32.72***	43560
Physical health	1.4	0.66	1.34	0.67	1.13	0.66	1.37	0.66	280.79***	41215
Mental health	1.01	0.78	1.01	0.8	0.91	0.77	1	0.79	31.61***	40761
Risk behaviors	1.2	1.05	1.13	1.01	0.86	0.9	1.16	1.04	183.48***	41469
School connection	2.39	0.9	2.41	0.87	2.4	0.84	2.39	0.89	1.61	39684
Self esteem	2.09	0.7	2.15	0.7	2.13	0.69	2.1	0.7	19.84***	39816
Popularity (in-degree)	4.32	3.63	4	3.34	3.14	2.85	4.16	3.55	211.94***	43560
Centrality	0.78	0.64	0.79	0.66	0.66	0.65	0.77	0.64	66.78***	43560
Social status (prestige)	0.14	0.05	0.13	0.05	0.1	0.05	0.14	0.05	1084.89***	39191
Best male friend	0.54	0.5	0.48	0.5	0.43	0.5	0.52	0.5	96.12***	43560
Best female friend	0.59	0.49	0.54	0.5	0.46	0.5	0.57	0.5	131.04***	43560
Density	0.29	0.14	0.31	0.15	0.33	0.16	0.3	0.15	141.76***	41782
Isolate	0.04	0.19	0.04	0.20	0.08	0.26	.04	.20	69.81***	44977

*p<.05, **p<.01, ***p<.001

and Asian youth were least likely to be isolates in comparison to both first and second-generation youth of their same racial/ethnic heritage (p<.001). With respect to structural integration, first-generation immigrant youth tended to comprise more dense networks (p<.001). Results for school connection varied widely across racial and ethnic group, with Hispanic youth reporting the lowest levels of school connection and Asian youth the

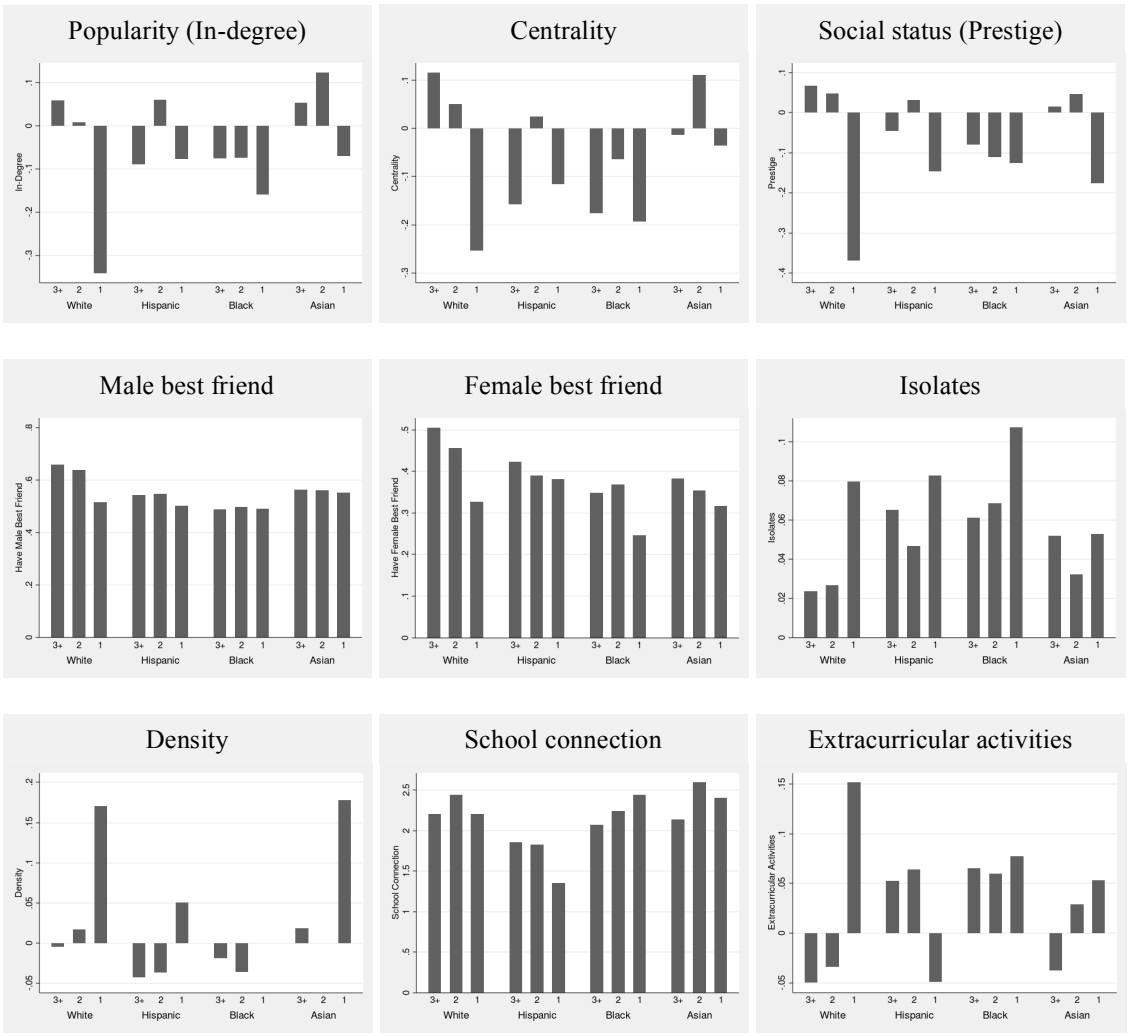

Figure 3. Dyadic, network, and school integration by generation and race/ethnicity. ANOVA tests significant at $p < .001$ for all variables.

highest – with no discernable pattern across immigrant generation. Finally, while first-generation White, Black, and Asian youth participated in extracurricular activities at higher rates than their second and third-plus peers ($p<.001$) first-generation Hispanic youth participated at lower rates.

Dyadic integration

Regression analyses for dyadic integration at the individual friendship level are presented in Tables 2 and 3. Similar findings are noted for boys and girls for having a best friend. In comparison to White, third-generation/native students (reference group), Hispanic ($p<.001$), Asian ($p<.001$), Other/Mixed ($p<.001$), and second-generation immigrant youth ($p<.001$) were each more likely to have a best friend in the study sample. The only significant interaction effect between race/ethnicity and immigrant generation was for first- ($p<.05$) and second- ($p<.01$) generation Hispanic girls, who were less likely to have a friend than their third-generation counterparts. The composition of a friendship group also significantly predicted likelihood of a best friend nomination, such that a standard deviation increase in the percentage of friend of the same race/ethnicity was associated with a 79% (CI = 1.68-1.92) increase in the odds of having a best friend and a 54% (CI 1.43-1.65) increase for girls. Similar results were observed for having a friend of the same immigrant generation: Boys with higher same-generation friend groups were more than twice as likely to report having a best friend (OR 2.22, CI=1.95-2.53) and girls similarly almost twice as likely to report having a best friend (OR=1.88, CI-1.72-2.04).

In the first and third models (see Table 2), the interaction between % friends of the same race/ethnicity by immigrant generation as well as the % friends of same generation by immigrant generation were each significant in the opposite directions. First- and second-generation boys and girls who make friends with other first- and second-generation youth are less likely to have a best friend compared to their third-generation/native peers who make friends with other third-generation/native youth

(p<.001 for all interaction terms). The opposite, however, is true for race/ethnicity: first- and second-generation immigrant youth are more likely to have a best friend when their

Table 2: Friendship integration: Best friends

	Best Friend (Boy) (n=21,016, boys)				Best Friend (Girl) (n=21,810)			
	OR	CI	OR	CI	OR	CI	OR	CI
Individual characteristics								
Age	0.91*	0.84-0.98	0.91*	0.85-0.98	0.88***	0.82-0.94	0.88**	0.82-0.95
Gender (1=female)	1***	0-0	1***	0-0	1***	0-0	1***	0-0
Grade	0.94	0.88-1	0.94	0.88-1	0.88	0.76-1.02	0.88	0.76-1.01
Years in school	1.15**	1.06-1.25	1.15**	1.06-1.25	1.3***	1.18-1.43	1.3***	1.19-1.44
Mother's Ed: HS grad	1.04	0.88-1.23	1.06	0.9-1.25	1.02	0.86-1.21	1.05	0.89-1.24
Mother's Ed: College +	0.96	0.79-1.16	0.97	0.81-1.18	0.85*	0.72-0.99	0.87	0.74-1.02
Hispanic	1.48***	1.25-1.76	1.35***	1.15-1.59	1.75***	1.42-2.14	1.39***	1.17-1.66
Black	0.92	0.75-1.13	0.95	0.8-1.14	0.73***	0.63-0.85	0.76***	0.66-0.88
Asian	1.52**	1.19-1.94	1.41**	1.17-1.71	1.21	0.85-1.72	1.08	0.88-1.33
Other	1.65***	1.37-1.99	1.63***	1.37-1.94	1.32**	1.13-1.54	1.28**	1.09-1.51
1st generation immigrant	1.12	0.67-1.87	2.25***	1.6-3.15	1.44	0.92-2.25	1.68***	1.27-2.21
2nd generation immigrant	1.73**	1.22-2.46	2.72***	2.14-3.45	1.82***	1.33-2.51	2.39***	1.92-2.97
% friends same gen	2.53***	2.23-2.86	2.22***	1.95-2.53	2.06***	1.89-2.24	1.88***	1.72-2.04
% friends same race/eth	1.67***	1.55-1.81	1.79***	1.68-1.92	1.54***	1.43-1.65	1.58***	1.48-1.69
Covariates								
Extra-curricular activities	1.01	0.97-1.06	1.01	0.97-1.06	1.07*	1.02-1.13	1.08**	1.02-1.13
Physical health	1.07	1-1.14	1.07*	1-1.15	1.01	0.95-1.08	1.02	0.95-1.08
Mental health	0.95	0.89-1.02	0.95	0.89-1.01	1.01	0.94-1.08	1.01	0.94-1.08
Risk behavior	0.99	0.94-1.04	0.99	0.94-1.05	1.01	0.95-1.07	1.01	0.96-1.07
School connection	1.02	0.57-1.8	1.06	0.59-1.9	0.87	0.45-1.71	0.93	0.46-1.89
Self-esteem	0.81	0.52-1.25	0.79	0.5-1.23	0.91	0.53-1.54	0.86	0.5-1.49
Race/eth X Immigration								
Hispanic X 1st gen	0.86	0.51-1.46			0.52*	0.31-0.9		
Hispanic X 2nd gen	0.73	0.5-1.07			0.54**	0.36-0.82		
Black X 1st gen	1.35	0.66-2.76			1.46	0.77-2.79		
Black X 2nd gen	1.12	0.72-1.74			1.09	0.69-1.72		
Asian X 1st gen	1.1	0.68-1.78			0.91	0.49-1.69		
Asian X 2nd gen	0.83	0.57-1.2			0.65	0.39-1.09		
Other X 1st gen	0.71	0.47-1.07			0.92	0.67-1.27		
Other X 2nd gen	1.04	0.7-1.54			.80	0.60-1.08		
% Friends X Immigration								
% frd same gen X 1st gen	0.42***	0.32-0.56			0.61***	0.49-0.75		
% frd same gen X 2nd gen	0.52***	0.41-0.66			0.59***	0.5-0.69		
% frd same race/eth X 1st gen	1.44***	1.18-1.75			1.43***	1.18-1.72		
% frd same race/eth X 2nd gen	1.27**	1.07-1.52			1.03	0.88-1.21		
School variables								
% immigrant	0.6	0.22-1.64	0.67	0.23-1.94	0.35	0.1-1.21	0.45	0.11-1.83
% students of color	0.28***	0.18-0.45	0.28***	0.18-0.44	0.37***	0.22-0.61	0.37***	0.22-0.61
School size (/100)	1*	1-1	1*	1-1	1	1-1	1	1-1
School X generation								
% immigrant X 1st gen			0.69***	0.59-0.82			0.77*	0.62-0.96
% immigrant X 2nd gen			0.84	0.69-1.01			0.74**	0.61-0.89
% students of color X 1st gen			1.1	0.81-1.51			1.15	0.93-1.41
% students of color X 2nd gen			0.84	0.68-1.03			0.85*	0.72-1
Intercept	3.32***	2.32-4.75	3.32***	2.31-4.78	3.83***	2.58-5.68	3.82***	2.56-5.71

*p<.05, **p<.01, ***p<.001

**Male, white, third-generation/native youth with Mother's education less than high school compose the reference group

friend group is composed of other same race/ethnicity youth. This relationship is of greatest magnitude for first-generation youth: boys are roughly 44% (CI 1.18-1.75) and girls 43% (CI 1.18-1.72) more likely to nominate a best friend when immersed within a same race, same-ethnic friend group. To summarize the in-group bonding benefits of race and ethnic background trump those benefits of bonding with other immigrants on these network measures. Immigrant youth are more likely to report having a best friend when they develop same race/ethnicity friendships with their 2nd and 3rd/native peers.

School-level terms were also included in the models (Table 2). As the percentage of students of color increased in the school, the less likely all youth (boys and girls) were to nominate a best friend ($p<.001$ for both boys and girls). The percentage of immigrant youth in the school was not a significant predictor. In addition, the interaction between percent immigrants in the school and immigrant generation indicated that first-generation youth were between 31% (boys, OR .69, CI=.59-.82) and 23% (girls, OR=.77, CI=.62-.96) *less* likely to nominate a best friend in schools with a greater proportion of immigrant youth, controlling for other demographic factors. This finding suggests that first-generation immigrant youth in high-immigrant schools might not necessarily be more integrated at the dyadic friendship level. Similar findings were observed for both the percentage of students of color by second-generation and percent immigrant by second-generation.

The two models in Table 3 present results for a logistic model predicting isolation, or the likelihood that a youth neither nominates a friend nor is nominated as a friend. Similar relationships with the opposite direction are noted for isolation in comparison to best-friend models. Being an immigrant as well as having friends of the

same generation or race/ethnicity were both protective factors for social isolation. Among interactions, Asian youth X generation emerged as a predictor suggesting

Table 3: Friendship integration: Isolates

	Isolate (n=43,123)			
	OR	CI	OR	CI
Individual characteristics				
Age	1.19**	1.06-1.34	1.19**	1.06-1.34
Gender (1=female)	0.79**	0.69-0.91	0.79**	0.69-0.92
Grade	0.99	0.84-1.17	1	0.85-1.17
Years in school	0.84**	0.75-0.94	0.83**	0.74-0.94
Mother's Ed: HS grad	0.91	0.69-1.22	0.92	0.7-1.22
Mother's Ed: College +	0.8	0.58-1.09	0.81	0.6-1.09
Hispanic	1.01	0.73-1.41	1.03	0.78-1.36
Black	1.2	0.79-1.82	1.23	0.85-1.78
Asian	1.19	0.8-1.76	0.92	0.66-1.28
Other	0.8	0.63-1.02	0.79*	0.64-0.98
1st generation immigrant	0.94	0.61-1.43	0.57**	0.37-0.86
2nd generation immigrant	0.58**	0.39-0.84	0.44***	0.35-0.57
% friends same gen	0.33***	0.28-0.39	0.32***	0.27-0.38
% friends same race/eth	0.38***	0.31-0.46	0.39***	0.32-0.47
Covariates				
Extra-curricular activities	0.86**	0.78-0.96	0.87**	0.78-0.96
Physical health	0.93	0.84-1.03	0.93	0.84-1.03
Mental health	0.97	0.88-1.07	0.98	0.89-1.07
Risk behavior	0.9**	0.84-0.96	0.9**	0.84-0.96
School connection	0.53	0.23-1.22	0.56	0.25-1.26
Self-esteem	1.99*	1.07-3.7	1.90*	1.03-3.49
Race/eth X Immigration				
Hispanic X 1st gen	0.93	0.52-1.65		
Hispanic X 2nd gen	0.91	0.59-1.41		
Black X 1st gen	1.68	0.86-3.27		
Black X 2nd gen	0.82	0.35-1.91		
Asian X 1st gen	0.41*	0.19-0.87		
Asian X 2nd gen	0.74	0.43-1.25		
Other X 1st gen	0.99	0.67-1.44		
Other X 2nd gen	0.77	0.51-1.15		
% Friends X Immigration				
% frd same gen X 1st gen			2.31	0.39-13.73
% frd same gen X 2nd gen			7.66***	3.64-16.13
% frd same race/eth X 1st gen			1	1-1
% frd same race/eth X 2nd gen				
School variables			1.41*	1.01-1.98
% immigrant	3.74	0.76-18.41	1.16	0.89-1.51
% students of color	7.66***	3.5-16.78	0.93	0.63-1.37
School size (/100)	1	1-1	1.12	0.83-1.52
School X generation				
% immigrant X 1st gen				
% immigrant X 2nd gen				
% students of color X 1st gen				
% students of color X 2nd gen				
Intercept	0***	0***	0***	0***

*p<.05, **p<.01, ***p<.001

**Male, white, third-generation/native youth with Mother's education less than high school compose the reference group

that first-generation (OR=.31, CI=.19-.87) Asian youth are less likely to be isolates than their third-generation plus peers, controlling for other factors. The interaction effects of friendship group composition by generation were not modeled as isolates by definition to not have friend groups. Similarly to best friend models, the social composition of a school was significantly related to social isolation. At the school level, youth are seven times as likely to be an isolate (OR=7.66, CI=3.5-16.78) for each standard deviation increase in the percentage of students of color in a school.

Network integration

Table 4 presents the results of survey-weighted negative binomial regression (popularity) and ordinary least squares regression (centrality). For each outcome, two models are presented. The first model includes individual characteristics, covariates, the interaction between race/ethnicity and immigrant generation, the percentage of same race/ethnicity and same immigrant generation friendships by immigrant generation, and school variables. The second model removes the interactions between race/ethnicity and immigration and percent of same race/ethnicity and immigrant generation friends to instead focus on the interaction between school variables and immigrant generation.
In the first model, first-generation immigrants were significantly less likely to receive friendship nominations (IRR=0.82, CI=.71-.94) after controlling for individual demographic characteristics including age, gender, grade, years at the school, and parent's education level. However, a standard deviation increase in the percentage of friends with the same generation was associated with a 7% increased likelihood of another friendship nomination (IRR=1.07, CI=1.01-1.10) while a similar increase in friends of the same race/ethnicity resulted in an 9% increase (IRR=1.09, CI=1.06-1.12)

Significant interaction effects were observed for first (IRR=1.24, CI=1.08-1.43) and second (IRR=1.14, CI=1.01-1.29) generation Asian youth. In addition, the interaction between percent same race/ethnic friendship (IRR=1.07, CI=1.01-1.13) and first-generation was also significant. In the second model predicting popularity, similar

Table 4: Network integration: Popularity and centrality

	Popularity (In-degree) (n=43,123)				Centrality (n=43,123)			
	IRR	CI	IRR	CI	*β*	SE	*β*	SE
Individual characteristics								
Age	0.96*	0.93-0.99	0.96*	0.93-0.99	-0.11***	.02	-0.11***	.02
Gender (1=female)	1.03*	1.01-1.05	1.03*	1.01-1.05	0.03	.02	0.03	.02
Grade	0.99	0.95-1.03	0.99	0.95-1.03	0	.02	0	.02
Years in school	1.09***	1.07-1.11	1.09***	1.07-1.11	0.06***	.02	0.06***	.02
Mother's Ed: HS grad	1.09**	1.03-1.15	1.09**	1.03-1.15	0.09***	.02	0.09***	.02
Mother's Ed: College +	1.11***	1.05-1.17	1.11***	1.06-1.17	0.15***	.02	0.16***	.02
Hispanic	1.04	0.98-1.1	1.04	0.98-1.11	0.07**	.03	0.04	.03
Black	0.95	0.88-1.02	0.97	0.9-1.05	-0.21***	.04	-0.19***	.05
Asian	0.94	0.85-1.03	1.01	0.93-1.1	0.02	.04	0.04	.03
Other	1.02	0.94-1.11	1.03	0.96-1.11	0.13***	.03	0.12***	.03
1st generation immigrant	0.82**	0.71-0.94	0.92	0.84-1.02	0.02	.09	0.07	.05
2nd generation immigrant	1.03	0.93-1.13	1.13***	1.07-1.19	0.21***	.04	0.28***	.03
% friends same gen	1.07***	1.04-1.10	1.06***	1.04-1.09	0.23***	.02	0.21***	.02
% friends same race/eth	1.09***	1.06-1.12	1.1***	1.07-1.12	0.23***	.02	0.23***	.01
Covariates								
Extra-curricular activities	1.1***	1.08-1.12	1.1***	1.08-1.12	0.1***	.01	0.1***	.01
Physical health	1	0.98-1.01	1	0.98-1.01	0.03***	.01	0.03***	.01
Mental health	1.07***	1.05-1.08	1.07***	1.05-1.08	0.03*	.01	0.03*	.01
Risk behavior	1.04***	1.03-1.05	1.04***	1.03-1.05	-0.02	.01	-0.02	.01
School connection	0.99	0.81-1.22	0.98	0.8-1.2	-0.27***	.05	-0.25***	.05
Self-esteem	0.89	0.76-1.04	0.89	0.76-1.05	0.05	.05	0.03	.04
Race/eth X Immigration								
Hispanic X 1st gen	1.03	0.88-1.2			-0.16	.08		
Hispanic X 2nd gen	1.06	0.94-1.19			-0.06	.05		
Black X 1st gen	1.06	0.82-1.38			0.24	.12		
Black X 2nd gen	1.11	0.97-1.26			0.25***	.07		
Asian X 1st gen	1.24**	1.08-1.43			0.03	.09		
Asian X 2nd gen	1.14*	1.01-1.29			0	.08		
Other X 1st gen	1.02	0.87-1.2			-0.05	.07		
Other X 2nd gen	1.05	0.96-1.15			-0.08	.05		
% Friends X Immigration								
% frd same gen X 1st gen	0.93	0.85-1.02			-0.17***	.04		
% frd same gen X 2nd gen	0.97	0.93-1.02			-0.08*	.04		
% frd same race/eth X 1st gen	1.07*	1.01-1.13			0.05	.03		
% frd same race/eth X 2nd gen	1.03	0.98-1.07			0	.02		
School composition								
% immigrant	1.01	0.62-1.66	1.1	0.68-1.79	-0.24***	.06	-0.32***	.06
% students of color	0.67**	0.53-0.84	0.63***	0.5-0.78	0.14*	.05	0.16**	.05
School size (/100)	1	1-1	1	1-1	0	.00	0	.00
School X generation								
% immigrant X 1st gen			0.93	0.84-1.03			-0.01	.03
% immigrant X 2nd gen			0.94	0.88-1			-0.01	.02
% students of color X 1st gen			1.14*	1.03-1.26			0.01	.04
% students of color X 2nd gen			1.06*	1.01-1.12			-0.07**	.03
Intercept	4.61***	4.06-5.23	4.59***	4.05-5.2	-0.2***		-.19***	.02

*p<.05, **p<.01, ***p<.001

**Male, white, third-generation/native youth with Mother's education less than high school compose the reference group

relationships are observed among study variables. Of note, the interaction between the percentage of students of color and immigrant generation was significant for both first (IRR=1.14, CI=1.03-1.26) and second-generation (IRR=1.06, CI=1.01-1.12) immigrant youth, suggesting that immigrant youth in schools with higher percentages of youth of color are more likely to receive a friendship nomination.

The second two models predicting centrality yield similar results to the first model. Among main effects, Black youth were less likely to be central in their networks (β=-.21 p<.001), while second-generation immigrants were more likely to be central (β=.21, p<.001). Similarly, positive main effects are observed for the percentage of friends of the same generation (β=.23, p<.001) and race/ethnicity (β=.23, p<.001). Among interactions, again a significant interaction is observed among second-generation Black youth (β=.25, p<.001), suggesting that this sub-population is more central than their 1st and 3rd/native peers. Additionally, the interaction of the percentage of friends of the same generation by first (β=-.17, p<.001) and second (β=-.08, p<.05) generation was significant. This finding is consistent with the results from the dyadic integration analyses and provide further evidence to the idea that immigrant youth become more integrated when making friends with friends not of the same immigrant generation. Main effects for school composition indicate that an increase in the percentage of immigrant youth in the school is associated with a decrease in centrality (β=-.24, p<.001), while an increase in the percentage of students of color is associated with an increase in centrality (β=.14, p<.001). Similar results are observed in the final model, with an added significant interaction effect between the percentage of students of color in the school and second-generation (β=-.07, p<.001). The results of this final interaction suggest that

immigrant youth in schools with higher proportions of students of color tend to be more integrated at the network level.

Table 5 presents the results of social status and density. For social status, first-generation immigrants (β=-.19, p<.05) are predicted to have slightly lower social status,

Table 5: Network integration: Social status and density

	Social status (Proximity Prestige) (n=38,673)				Density (n=41,269)			
	β	SE	β	SE	β	SE	β	SE
Individual characteristics								
Age	-0.01	.03	-0.01	.03	0.01*	.01	0.02*	.01
Gender (1=female)	0.03	.02	0.03*	.02	0.02***	.02	0.1***	.02
Grade	0.08*	.03	0.08*	.03	0.01***	.01	0.07***	.01
Years in school	0.07***	.02	0.07***	.02	0.01***	.01	-0.05***	.01
Mother's Ed: HS grad	0.11***	.03	0.11***	.03	0.03	.03	-0.02	.03
Mother's Ed: College +	0.16***	.03	0.17***	.03	0.03	.03	-0.02	.03
Hispanic	0.05	.03	0.03	.03	0.03*	.03	-0.05	.03
Black	-0.04	.05	-0.03	.05	0.03**	.03	-0.1**	.03
Asian	-0.02	.06	-0.02	.05	0.05	.05	0	.04
Other	-0.01	.03	0	.03	0.02***	.02	-0.08***	.02
1st generation immigrant	-0.19*	.09	-0.22***	.05	0.09	.09	0.05	.05
2nd generation immigrant	0.1	.07	0.05	.03	0.08	.08	-0.07*	.03
% friends same gen	0.05***	.01	0.04***	.01	0.02***	.02	-0.07***	.02
% friends same race/eth	0.08***	.01	0.07***	.01	0.01***	.01	-0.06***	.01
Covariates								
Extra-curricular activities	0.09***	.01	0.09***	.01	0.01***	.01	-0.07***	.01
Physical health	0	.01	0	.01	0.01	.01	0.01	.01
Mental health	0.06***	.01	0.06***	.01	0.01***	.01	-0.04***	.01
Risk behavior	0.07***	.01	0.07***	.01	0.01***	.01	-0.04***	.01
School connection	-0.11*	.05	-0.11*	.05	0.04**	.04	0.13**	.04
Self-esteem	-0.04	.04	-0.04	.04	0.04	.04	0	.03
Race/eth X Immigration								
Hispanic X 1st gen	-0.05	.10			0.08	.08		
Hispanic X 2nd gen	-0.03	.07			0.07	.07		
Black X 1st gen	0.08	.14			0.16	.16		
Black X 2nd gen	0.02	.09			0.06	.06		
Asian X 1st gen	0	.09			0.08*	.08		
Asian X 2nd gen	-0.01	.08			0.1	.10		
Other X 1st gen	0.06	.08			0.06*	.06		
Other X 2nd gen	0.01	.05			0.05	.05		
% Friends X Immigration								
% frd same gen X 1st gen	-0.06	.04			0.04*	.04		
% frd same gen X 2nd gen	0.03	.03			0.03	.03		
% frd same race/eth X 1st gen	-0.03	.03			0.04	.04		
% frd same race/eth X 2nd gen	0	.02			0.02	.02		
School variables								
% immigrant	0.04	.06	-0.07	.08	0.05	.05	-0.05	.06
% students of color	0.04	.04	0.03	.05	0.03***	.03	0.12***	.03
School size (/100)	0	.00	0	.00	0	.00	0	.00
School X generation								
% immigrant X 1st gen			0.01	.03			0	.03
% immigrant X 2nd gen			0.06**	.02			0.02	.02
% students of color X 1st gen			0.13**	.04			0	.04
% students of color X 2nd gen			-0.02	.03			-0.01	.03
Intercept	-0.16***	.02	-0.14***	.02	0.03	.03	-0.01	.03

*p<.05, **p<.01, ***p<.001

**Male, white, third-generation/native youth with Mother's education less than high school compose the reference group

while having friends of a similar immigrant generation and race/ethnicity were both associated with increases in social status (p<.001). Interaction effects in the second model indicate that a greater percentage of immigrants in the school is associated with an increase in prestige for second-generation youth (β=.06, p<.001), while an increase in the percentage of students of color is associated with an increase for first-generation youth (β=.13 p<.001). Similar to previous models, these findings provide evidence that immigrant youth tend to be more integrated in schools with greater proportions of students of color (i.e. non-European American). The two models predicting density indicate that Black (β=.03, p<.01), Hispanic (β=.03, p<.05), and Other/mixed (β=.02, p<.01) youth have slightly more dense networks. Additionally, the percentage of friends of same generation (β=.02, p<.001) and race/ethnicity (β=.01 p<.001) were each positively associated with density, suggesting that these indicators predict more tight-knit friendship groups. Evidence from the interaction terms also indicate that these associations may be amplified for first-generation Asian (β=.08, p<.05) and Other/Mixed (β=.06, p<.05) youth. While interactions with school-level variables were not significant for this outcome, youth tended to have denser networks as the percentage of students of color increased (p<.001) in both models.

Institutional integration

Table 6 presents the results for structural integration, measured in terms of connection to school and participation in extracurricular activities. Few significant predictors emerged for school connection – in fact, the only significant predictor in both models was Black youth (β=-.05, p<.001) who had lower levels of predicted school connection. It should be noted that by in large, first- and second-generation youth are

just as connected to the structural, institutional school community as their third-generation and native peers. School variables indicated similar in magnitude but opposite direction for percentage of immigrant youth vs. the percentage of same race/ethnicity, such that an

Table 6: Institutional integration: School connection and extracurricular activities

	School Connection (n=43,123)				Extracurricular Activities (n=43,123)			
	β	SE	*β*	SE	*β*	SE	*B*	SE
Individual characteristics								
Age	0	.00	0	.00	-0.06**	.02	-0.06**	.02
Gender (1=female)	0	.00	0	.00	0.05*	.02	0.05*	.02
Grade	0.01	.00	0.01	.00	0.02	.02	0.02	.02
Years in school	0	.00	0	.00	0.05***	.01	0.05***	.01
Mother's Ed: HS grad	-0.01	.01	-0.01	.01	0.02	.02	0.02	.02
Mother's Ed: College +	0.01	.01	0.01	.01	0.22***	.02	0.22***	.02
Hispanic	0	.01	0	.01	-0.01	.03	0	.02
Black	-0.05**	.02	-0.05**	.02	0.09**	.03	0.1**	.04
Asian	0.08	.05	0.04	.03	0.09*	.04	0.17***	.04
Other	0.01	.01	0	.01	0.07*	.03	0.05*	.02
1st generation immigrant	-0.01	.03	-0.01	.02	0.04	.07	0.16**	.05
2nd generation immigrant	-0.01	.02	-0.01	.01	-0.09	.09	0.1***	.03
% friends same gen	0	.00	0	.00	0.03*	.01	0.03**	.01
% friends same race/eth	-0.01**	.00	0	.00	0.03*	.01	0.01	.01
Covariates								
Extra-curricular activities	0	.00	-0.01**	.00	-	-	-	-
Physical health	0.01	.00	0	.00	0.08***	.01	0.08***	.01
Mental health	0	.00	0.01	.00	0.04***	.01	0.04***	.01
Risk behavior	0***	.00	0	.00	0.05**	.02	0.04**	.02
School connection	-	-	-	-	-0.21***	.05	-0.21***	.06
Self-esteem	0.75***	.01	0.75***	.01	0.03	.04	0.03	.04
Race/eth X Immigration								
Hispanic X 1st gen	-0.02	.02			-0.03	.08		
Hispanic X 2nd gen	0	.02			0.16	.08		
Black X 1st gen	0.03	.03			0.02	.13		
Black X 2nd gen	0	.01			0.17	.13		
Asian X 1st gen	-0.06	.04			0.1	.07		
Asian X 2nd gen	-0.06	.04			0.21	.14		
Other X 1st gen	-0.04	.03			-0.04	.06		
Other X 2nd gen	-0.04	.04			0	.08		
% Friends X Immigration								
% frd same gen X 1st gen	-0.02	.01			-0.06*	.03		
% frd same gen X 2nd gen	-0.01	.01			-0.06*	.03		
% frd same race/eth X 1st gen	0.02*	.01			-0.09**	.03		
% frd same race/eth X 2nd gen	0	.01			-0.03	.03		
School variables								
% immigrant	0.25*	.12	0.29*	.13	0	.07	0.01	.08
% students of color	-0.2**	.06	-0.21**	.06	-0.09*	.04	-0.08	.04
School size (/100)	0	.00	0	.00	0	.00	0	.00
School X generation								
% immigrant X 1st gen			-0.03	.02			-0.04	.03
% immigrant X 2nd gen			-0.03	.02			-0.04	.03
% students of color X 1st gen			0.01	.02			-0.11*	.05
% students of color X 2nd gen			0.03*	.01			0.01	.03
Intercept	-0.26***	.03	-0.26***	.03	-0.17***	.03	-0.18***	.03

*p<.05, **p<.01, ***p<.001

**Male, white, third-generation/native youth with Mother's education less than high school compose the reference group

increase in the standard deviation in the percentage of immigrants in the school was associated with a .25 increase in the school connection of the youth ($p<.05$), while an increase in the percentage of students of color was associated with a .20 decrease in school connection ($p<.01$). In summary, youth tend to be more integrated into institutional structures in schools with greater proportions of immigrants, but not necessarily more students of color. The latter of these two predictors also varies by immigrant generation, as the interaction with second-generation youth was positive and significant ($p<.05$).

A similar pattern emerges for predictors of extracurricular activities, with some important differences. In the first model, Black ($\beta=.09$, $p<.05$), Asian ($\beta=.09$, $p<.05$), Other/mixed ($\beta=.07$ $p<.05$), along with youth with higher rates of percent friends of the same generation ($\beta=.03$, $p<.05$) and racial/ethnic background ($\beta=.03$, $p<.05$) were each significantly associated with an increased participation rate of extracurricular activities. Interactions with friendship status suggest that friendship with same-generation youth is only associated with higher extracurricular participation for third-generation plus youth ($p<.05$). An additional finding indicates fewer same race/ethnicity friendships held by second-generation youth is associated with greater participation in extracurricular activities for this subgroup ($p<.01$). Among school predictors and interactions, an increase in the percentage of students of color was associated with a decrease in participation in extracurriculars ($\beta=-.09$, $p<.05$), and the interaction with first-generation youth ($\beta=-11$, $p<.05$) indicates that first-generation youth in schools high in the

proportion of students of color may be less likely to participate in extracurricular activities.

Discussion

Overall, the findings of this study are consistent with the recent report of the National Academies of Science summarizing the literature on the integration of immigrants in the United States (Waters & Gerstein Pineau, 2015): immigrants and their descendants are integrating into American society. Immigrant youth are just as connected to their school communities, building relationships with their peers, teachers, and administrators, participating in extracurricular activities, and making friends in youth school networks. Perhaps most striking in this study is the finding that second-generation youth in schools with immigrant populations develop strong social networks and occupy positions of social prominence on par with or even exceeding their third-generation and native peers. These findings contrast with the claims of Huntington (2004) and others who have argued that recent patterns of migration to the US are leading to social fragmentation or a clash of cultural, and instead provides evidence that immigrant youth are integrating across dyadic, network, and institutional levels within the context of US school communities.

A primary contribution of this study is the recognition that immigrant generation remains an important predictor in determining the social position and inclusion of immigrant youth in school institutional structures above and beyond race and ethnicity. Evidence suggests that patterns of integration vary greatly between first- and second-generation youth and that these youth navigate school social environments in very different ways. Consistent with other studies (Leszczensky & Pink, 2015; Smith et al.,

2014; Vermeij et al., 2009) first-generation youth tend to be on the margins of friendship networks, occupy less central positions, and have less social status. Nevertheless, they also report higher levels of school connection and extracurricular activities than their second and third plus generation peers, echoing the findings of other research that highlight the involvement of first-generation youth in school institutional structures (Cherng et al., 2014). This study breaks from previous areas of research (Cherng et al., 2014) in demonstrating that second-generation youth may well be more like insiders than outsiders in youth friendship networks. Second-generation youth are much more likely to be integrated into friendship networks, and more likely to be popular, central, and have a best friend in their networks – even in comparison to their third-generation peers. While first-generation youth seem to be more integrated through formal school institutional structures like participation in activities and developing relationships with teachers, second-generation youth are more integrated via informal peer friendships.

The composition of a youth's friendship network also plays an important role in facilitating integration. In relation to integration, race and immigrant generation interact in both complimentary and opposing ways. In general, having friends of the same immigrant generation and race/ethnicity predicted greater likelihood of having a best friend and protected against social isolation across all groups. However, the effects differed by immigrant generation: while third-generation immigrants always benefit socially from having other third-plus friends, first-generation and sometimes second-generation youth who develop friendships with other immigrant peers may be less likely to have a best friend and risk social isolation. This interaction effect highlights the complex ways in which social processes give rise to friendship formation: while ethnic

and immigrant background provide important sources for social support and ethnic identity, they may also divert opportunities for greater integration with mainstream students. This finding builds upon the empirical literature that acknowledges the need for balance between fostering cross-cultural integration with the benefits of social support and group identify formation that come with same-culture friendships (Georgiades, Boyle, & Fife, 2013; Graham, Munniksma, & Juvonen, 2014; McGill, Way, & Hughes, 2012). However, this pattern was not the same for network integration: across all races and immigrant generations, having friends of the same racial, ethnic, and immigrant background was associated with greater popularity, centrality, and social status. These same-group friendship circles tended to be more dense, or tight-knit, among immigrants and students of students of color. Friendship groups also facilitated structural integration via participation in extracurricular activities, but only for native youth – for immigrant youth, friendships with others of similar background was associated with lower participation.

One possible interpretation of the findings related to same-culture friendships is that immigrant youth - particularly those of the first-generation - are caught between two opposing pressures: the pressure to form strong same-culture friendships that provide social support and reinforce identity formation, with the pressure to gain popularity and social status through the formation of friendship with third-generation and native youth. This dichotomy is reminiscent of Ogbu and Fordham's (1986; 2004) notion of oppositional collective identity and cultural frame of reference. In other words, immigrant youth may be challenged by the "burden of Acting American". Ogbu and Fordham developed this theory to explain disparities in academic achievement and draw

from the legacy of slavery and structural racism in the United States, but this same manner of thinking might be helpful to explain disparities in the social integration of immigrant youth. While this study does not specifically examine the processes of friendship development, these results question whether developing friendships with third-generation and native peers – and the social prestige that these friendships would garner – may also incentivize a movement away from an ethnic and cultural identity in favor of the adoption of a "mainstream" American identity (if one assumes such an identity exists).

Despite some exceptions, race and immigrant generation tended to work independently, but not in tandem, in predicting integration across subgroups, suggesting that the challenges and successes of integration are not unique to a specific cultural background at the population level. One notable exception to this rule is the case of first-generation Asian youth, who were more popular, less likely to be isolated, and had denser friendship networks. It may be that theories of segmented assimilation (Kroneberg, 2008; Portes & Zhou, 1993; Min Zhou, 2014) may best explain how the creation of tight-knit ethnic communities is reproduced among adolescent friendship networks in this study.

Another central finding of the study is that the higher racial and ethnic composition of the school is associated with decreased likelihood of having a best friend, greater social isolation, fewer received friendship nominations, decreased centrality, and increased density in friendship networks. The most striking of these relationships is in social isolation, such that youth are much more likely to be isolated for each standard deviation increase in the percentage of students of color in a school. In general, an increase in the number of students of color in schools is associated with fewer

connections among the students. Two potential confounders could explain this relationship. Schools with large populations of students of color could be larger or smaller, impacting the number of available friendships for youth. Moreover, such schools could have had differential rates of completion of the questionnaire – for example, if these schools tended to have slightly lower participation rates, students would be less likely to receive nominations since their friends would be "missing" on the data. Both school size and completion rates are correlated with the percentage of students of color ($p<.001$ for both). To examine if percentage of completed questionnaires was a factor that should have been included in the model, the same analyses were re-run with the number of completed questionnaires as a predictor variable. After adding this additional predictor, the relationship remained the same: schools with higher percentages of students of color (i.e. non-European American) were less cohesive and had fewer connections among the youth.

Relationships for immigrant generation were less clearly defined: as the number of immigrant youth increased in a school, youth were less central but more connected to the school. This finding is consistent with the evidence suggesting that first-generation youth are more no less integrated into school structures but may be less integrated in friendship networks (Cherng et al., 2014; Okamoto et al., 2013). Immigrant youth also tended to be more popular and have higher social status in schools with a greater percentage of students of color, which may indicate that race plays an important factor in amplifying or constraining the potential for integration for immigrant youth. These school level factors not only play a role in the friendships of immigrant youth but may also be important for native and third-generation youth. Native youth in high-immigrant

settings were more likely than first- and second-generation youth to have a best friend, suggesting that native youth may be situated in positions of advantage as fewer native youth comprise the school population. Across school-level factors, the percentage of students of color and students who are immigrants each play an important role in the formation of friendship networks.

Implications and Limitations

Three critical implications can be drawn from the evidence provided in this study. First, the integration of immigrant youth can occur across all levels. In the first-generation, immigrant youth are already building connections with teachers and school communities through both in-class and extracurricular activities – often at higher rates than their native born peers. By the second-generation, immigrant youth become integrated within friendship networks, occupying spaces of higher social status and popularity while building strong friendships and making best friends.

It is argued here that immigrant integration is possible, because this evidence suggested it *did* occur in a nationally representative sample of schools in the 1994-1995 school year. What this study cannot claim is whether these same processes of structural integration are occurring at the time of the writing of this paper, twenty years after the data were collected. The demographic landscape of youth in American and the composition of American schools has changed dramatically in the past twenty years (Orfield & Frankenburg, 2014; Taylor, 2014) and schools are becoming increasingly culturally and linguistically diverse (Scanlan & López, 2014). While some have rightly argued that increased diversity does not necessarily lead to increased integration (Lichter,

2013), the evidence in this study suggests that in schools with immigrant populations integration can occur across all institutional levels.

The second implication from this study is that hypersegregation of American public schools may work against the efforts of integrating immigrant youth into American society. This increasing hypersegregation, particularly for Black and Latino youth (Gándara, 2010; Orfield & Frankenburg, 2014), is an increasing concern among education scholars. The evidence from this study contributes to this literature, suggesting that schools with higher percentages of student of color may be characterized by greater social fragmentation marked by social isolation and fewer friendships within school settings. While the sample of this study is limited to 63 schools, future nationally representative studies of American schools need to examine the current status of across-school integration/segregation and how these across-school integration/segregation patterns may in turn impact the formation of friendships within schools.

The final implication is that school leaders should consider how race, ethnicity, and immigrant generation interact when designing culturally and linguistically responsive programs and policies. Of primary importance is the recognition that often times immigrant youth are outperforming their native peers – not just with respect to institutional integration but also on other factors like academic achievement (see Figure 4). How might schools view first-generation immigrant youth as assets to a school community rather than a cultural challenge? How might the strengths of immigrant

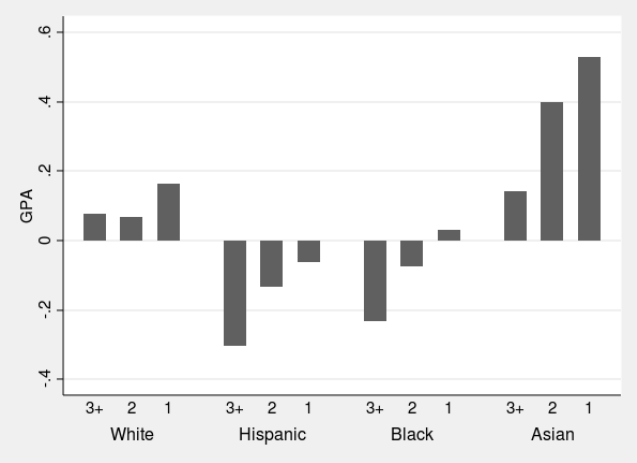

Figure 4. GPA by immigrant generation and race/ethnicity

youth be drawn up on to promote positive outcomes for all youth in schools? Additionally, second-generation youth may perform an important social role within schools with immigrant populations by helping to bridge cultural divides between first- and third-generation students. School leaders might consider how this unique strength of second-generation students may promote integration efforts in school settings.

The evidence in this study, based on cross-sectional descriptive analyses, cannot be used to make causal claims about how friendship formation processes may lead to greater integration. Future research using longitudinal data that examines how friendship networks change over time with respect to cultural and linguistic diversity are needed to further understand how friendships are formed and how they may impact youth health, behavior, and learning.

Conclusion

The goal of this study was to examine the structural integration of immigrant youth at the dyadic friendship, youth social network, and school institutional levels.

The evidence from this study suggests that the story of immigrant integration in school settings is a successful story of integration, but that trends toward increasing across school segregation may hinder integration efforts within schools. Culturally and linguistic programmatic interventions at the school level should look to the strengths that immigrant youth bring to school communities and draw upon these strengths to build schools that promote the positive and healthy youth development.

Chapter III: Immigrant integration and friendship formation among youth in US schools

Abstract

As the population of immigrant youth in the United States continues to increase (Passel, 2011), the ability of school communities in the United States to respond to the increasing cultural and linguistic diversity of their student populations is of mounting concern. This study examines the integration of youth in school communities through friendship networks, and explores how immigrant generation – being foreign born or the child of foreign born parents – plays a role in friendship formation among middle and high school youth in US schools. Exponential random graph modeling (ERGM) is used to model social processes of sociality and homophily in 63 school friendship networks using data from the 1994-1995 National Longitudinal Study of Adolescent to Adult Health (Add Health) (n=43,123). Findings indicate that immigrant generation contributes to friendship formation above and beyond the effects of race and ethnicity. For first-generation youth, immigrant generation is comparable to the importance of race and gender in friendship formation. As the cultural diversity of a school increases, the magnitude of homophily coefficients decreases, suggesting that increasing school diversity is accompanied by the greater integration of first- and second-generation immigrant youth. The implications of this research highlight the need to consider immigrant generation and school contexts when designing interventions to promote cross-group friendship and intergroup tolerance.

Introduction

Over the next half century, the United States will become more diverse across racial, ethnic, cultural, and linguistic lines (Colby & Ortman, 2014; Passel, 2011). By 2060, the majority of Americans will be non-White, and nearly 1 in 5 (18.8%) of the US population will be foreign born (Colby & Ortman, 2014; Taylor, 2014). Such changes will occur most dramatically among America's youth population: by 2050, roughly 1 in 3 youth will be foreign-born or children of foreign-born parents (Passel, 2011). These changes present what some scholars have named an "integration imperative" (Alba, Sloan, et al., 2011; Lichter, 2013) which calls upon schools, organizations, and communities to respond to the increasing diversity of America's children to ensure that all youth, regardless of background, are provided opportunities for healthy development.

Integration – or the degree to which two groups come to resemble one another– occurs across all domains of social life (Waters & Gerstein Pineau, 2015). Immigrant youth, who are embedded within the macro, mezzo, and micro-level contexts of neighborhoods, schools, families, and friendships (Bronfenbrenner & Morris, 2006), engage in regular bi-directional social interactions that lead to or away from greater integration in American society. As peer relationships play an important role in adolescent development and form the primary context through which youth interact with others of different social and cultural backgrounds (Dornbusch, 1989; Smetana, Campione-Barr, & Metzger, 2006), the study of youth friendship interactions provides a unique context to examine the social processes of integration. While previous studies of integration have focused primarily on race and ethnicity as drivers of friendship formation (Currarini et al., 2009; Goodreau et al., 2009; Kao & Joyner, 2004; Moody,

2001b), this study contributes to the literature by examining how immigrant generation may contribute to the study of integration in youth friendship networks above and beyond the effects of race and ethnicity.

The purposes of this study are twofold. First, this study assesses the degree to which immigrant youth choose other immigrants (and the extent to which native youth choose other natives) as friends, a social process known as homophily. Second, this study examines how the racial, ethnic, and immigrant composition of schools may be related to immigrant integration and discusses whether this evidence supports opportunity, contact, or competition theories of social interaction.

Same-group friendships: Homophily

One such social process is known as "homophily", or the tendency of individuals to form relationships with others of a similar set of characteristics, such as race, gender, socioeconomic class, among others (for a review, see Miller McPherson, Smith-Lovin, & Cook, 2001). Colloquially, this process represents the meaning of the common phrase, "birds of a feather, flock together". In youth networks, homophily occurs as youth choose friends of similar gender, grade level, and racial and ethnic background (Goodreau et al., 2009; Moody, 2001b; Shrum et al., 1988). Homophilous friendships tend to be strongest in the middle school years, while older adolescents are more likely to engage in cross-group friendships (Shrum et al., 1988). Additionally, friendships formed across groups tend to be less strong and stable than those formed within groups (McDonald et al., 2013; McPherson et al., 2001). In addition to gender, grade, and race/ethnicity, homophily has been observed across a wide variety of other domains such as academic achievement (Flashman, 2012), extracurricular activities (Schaefer et al.,

2011), obesity (Schaefer & Simpkins, 2014), smoking (Mercken et al., 2012), and a host of other factors that explain friendship formation. However, no studies have examined how immigrant generation interacts with race and ethnicity to explain friendship formation in a nationally representative sample of youth.

Among empirical studies of friendship formation, one of the most consistent findings is the tendency for youth to form friendships across racial and ethnic lines. Research on youth in Canada (Aboud et al., 2003; Aboud & Sankar, 2007), the Netherlands (Fortuin, van Geel, Ziberna, & Vedder, 2014), Greece (Reitz et al., 2015), Germany, Sweden, and England, (Smith et al., 2014) and the United States (Graham et al., 2014; Kao & Joyner, 2004; Moody, 2001b; Shrum et al., 1988) have all documented the prevalence of race and ethnicity in determining friendship formation. Moreover, these patterns appear in other types of social relationships as well: for example, one study noted that parental decisions about whom to invite to children's birthday parties can accelerate homophily on racial lines in both parents and children (Windzio, 2015). Moreover, similarities in friends' racial and ethnic backgrounds tend not to be explained by other factors, like cultural interests, opinions, or activities (Smith et al., 2014), though some experimental research suggests that language and accent may be more salient in relationships choices than race or ethnicity (Kinzler, Shutts, DeJesus, & Spelke, 2009).

It should be noted that homophily often results in positive outcomes for youth: same-group friendships can increase positive self-regard (Graham et al., 2014), provide academic support (Riegle-Crumb & Callahan, 2009; Suárez-Orozco et al., 2009), and provide access to social capital (Ryabov, 2009; Stanton-Salazar, 1997). Some research frames these benefits in terms of the degree of representation of an individual youth's

racial or ethnic background as a proportion of the student body – a concept sometimes referred to as congruence (Benner & Graham, 2009; Georgiades et al., 2013). Greater congruence is associated with protection against emotional and behavioral problems for most youth subgroups (Georgiades et al., 2013), and greater odds of graduation (Reed, 2015). School composition may be most important for the experience of Black youth in the United States, who may be particularly susceptible to experiences of racial discrimination in school settings (Goosby & Walsemann, 2012; Walsemann, Bell, & Maitra, 2011; Walsemann, Bell, & Goosby, 2011). These positive benefits are also weighed against research documenting the negative effects of hypersegregation and the concentration of students of color and of low socioeconomic status in the same schools (Bankston III & Caldas, 1996; Crain & Mahard, 1983; Gándara, 2010; Linn & Welner, 2007). Thus, while homophily is often associated with positive outcomes for youth in schools, these benefits may be negated by hypersegregation and social marginalization.

Cross-group friendships: Opportunity, contact, and competition theories

A number of individual characteristics help explain the extent to which youth establish friendships outside of their groups. Factors such as English language facility (Hamm, Brown, & Heck, 2005), positive intergroup attitudes and inclusive norms (Chen & Graham, 2015; Tropp et al., 2014), and differential ethnic group identity (M. Lee et al., 2014) may promote higher levels of cross-group friendships, while lower socioeconomic status may decease the likelihood of cross-group friendship (Houtte & Stevens, 2009). However, the tendency toward same-group friendship formation differs across social contexts, and these differences have led researchers to develop theoretical explanations

for why youth may choose friends of a similar background differently from one social context to another.

Two theoretical camps have guided researchers interested in explaining these phenomena: on one hand, opportunity (Blau, 1977) and contact theories (Allport, 1954); and on the other, ethnic competition theory (Bobo & Hutchings, 1996; Savelkoul, Scheepers, Tolsma, & Hagendoorn, 2011). Drawing from the theoretical work of Peter Blau (1977), opportunity theory suggests that the formation of cross-group social relationships is a function of the possible opportunities for cross-group interaction. Members of smaller groups tend to form more out-group relationships than members of larger groups because small-group members have fewer opportunities to form friendships with other small-group members and have more opportunities to form friendships with large-group members. Applied to immigrant friendships, opportunity theory would suggest that immigrant youth, who are often the "small" group in the context of American schools, will form more same-group friendships as the proportion of other youth with their cultural background increases. Thus, the decisions that youth make about their friendships depends very much on their local context – in particular the cultural makeup of their school community. Research citing evidence of opportunity theory at work suggests that fostering greater integration across schools (i.e. at the school-level) may also contribute to greater friendship integration within schools and local friendship networks (Houtte & Stevens, 2009).

Allport's (1954) contact theory suggests that greater positive contact with the out-group - coupled with optimal conditions for such social interactions - will lead to greater out-group tolerance (Pettigrew, 1998). These optimal conditions include groups' having

equal status, common goals, intergroup cooperation, and the promotion of cross-group interaction by authority figures (Allport, 1954). While the focus of this theory is to identify the social conditions that reduce group prejudice, some researchers have integrated this approach with opportunity theory to suggest that greater opportunities for out-group contact will lead to more out-group friendships (Vermeij et al., 2009) or that more positive out-group attitudes will be bi-directionally associated with greater out-group friendships (Vervoort, Scholte, & Scheepers, 2011).

An opposing theoretical framework suggests that increasing heterogeneity in schools will not facilitate greater cross-group friendships (Bobo & Hutchings, 1996; Savelkoul et al., 2011; Vervoort et al., 2011). Rather, heterogeneity results in the majority group's perceiving an ethnic threat from the non-majority group, and thus leading to fewer cross-group friendships and ethnic exclusionism. This approach, generally referred to as competition theory, has been used to explain the ethnic exclusionism that has arisen in European countries alongside the increasing proportion of non-majority ethnic immigrant communities in these countries (Bobo & Hutchings, 1996; Savelkoul et al., 2011; Scheepers, Gijsberts, & Coenders, 2002). In US schools-based research, empirical support for competition theory arises when "diverse" schools on the surface – e.g. those schools that have heterogeneous populations with respect to race, ethnicity, and immigrant generation – are characterized by social fragmentation and "us vs. them" mentality among competing racial and ethnic groups (Moody, 2001b).

Research on the salience of opportunity/contact versus competition theory in explaining cross-group friendship or integration in youth friendships is fairly mixed. In a study of Flemish schools, Houtte and Stevens (2009) found that increased diversity leads

to more inter-ethnic friendships for native youth, suggesting that native Dutch-speaking youth respond to more opportunities for cross-ethnic friendship in more diverse schools. Using Add Health data, also the source of data for the current study, Quillian and Campbell (2003) found that overall cross-race friendships increase with school racial diversity. Other studies, however, have suggested the opposite: greater diversity lead to more same-race friendships (Chan & Birman, 2009; González et al., 2007; Kao & Joyner, 2006). It may also be the case that the relationship between school heterogeneity and intergroup mixing is curvilinear or otherwise highly contextual – for example, research from both Moody (2001b) and Currarini, Jackson, & Pin (Currarini et al., 2009) found that the greatest division between groups occurred in schools with near equal representation of two separate groups, while the most heterogeneous friendships were formed in either high majority schools or highly diverse schools with multiple racial and ethnic groups. Whether there exists a direct relationship between school diversity and cross-group friendships therefore remains less than clear.

Network-based theories

A number of studies have examined the extent to which social networks facilitate integration through same- or cross-group friendship. These approaches explored how network position and network processes may in fact accelerate or prevent the formation of friendship across identity lines. One set of studies has focused on the boundaries of friendship formation – that is, examining tendencies toward same-group friendship formation as occurring within classes, within grades, within schools, or within neighborhoods (Baerveldt, Van Duijn, Vermeij, & Van Hemert, 2004; Frank et al., 2013; Leszczensky & Pink, 2015; Moody, 2001a). Across each of these studies is the

recognition that clusters form within networks that reflect other social structures not captured by the original network. School friendship networks are likely affected by factors such as the proportion of classes that students share with one another, whether or not students are in the same grade level, or whether they belong to a particular cultural or ethnic group. Network studies are thus challenged by the overlapping nature of the social structures that make up human networks in the lived world.

Some disagreement exists over whether race and ethnicity homophily can be explained by other factors that are correlated with this social phenomenon. In a study of Facebook friendships on college campuses, for example, Wimmer and Lewis (2010) argue that factors like shared background (e.g. attendance of the same 'elite' high schools), shared college dorm room, and network processes like reciprocity (being friends with someone who calls you a friend) and triadic closure (having friends in common) explain away most of the racial homophily effect. Other research from Mayer & Puller (2008), also studying Facebook data, compares observed networks with simulated networks based on alternative university-based policies aimed at promoting racial integration. These authors found that the alternative policies could not overcome the effects of racial homophily, indicating that the potential for university policies to promote racial integration through the change of university-based social structures might be somewhat limited. What is common to these network-based studies is the coupling of network processes – including reciprocity, density, or closure – along with homophily, to explain why youth form friendships with other youth of similar racial and ethnic background (Currarini et al., 2009; Goodreau et al., 2009; Wimmer & Lewis, 2010). To determine whether or not same-group friendship formation as a social process accurately

predicts friendship formation in friendship studies, researchers need to know of such friendships could have arisen as a result of the tendency to reciprocate friendships, to be friends with your friends, and other network-based processes.

What is lacking from most studies in the inclusion of immigrant generation as a predictor in friendship formation above and beyond the effects of race and ethnicity. While some studies – mostly in Europe – have examined immigrant and cultural group (Baerveldt et al., 2004; Smith et al., 2014; Vermeij et al., 2009) – these are measured much like race and ethnicity in United States samples and do not make distinctions between first- and second-generation groups. This study contributes to the literature by including immigrant generation alongside race and ethnicity in the prediction of friendship formation.

Research Questions

This study focuses on the role of immigrant generation in the formation of immigrant friendship networks, and examines the process of friendship formation in light of theories of social integration. Three hypotheses are tested to determine whether theories of 1) homophily, 2) opportunity and contact, and/or 3) competition are useful in explaining process of friendship formation and integration for immigrant youth in US schools, and are expressed as follows:

H1: Youth are more likely to make friends with other youth from the same immigrant generation, controlling for the effects of race, ethnicity, gender, and grade. (Homophily)

H2: Immigrant youth are more likely to form same-generation friendships in schools with *higher* proportions of immigrant youth (opportunity/contact theory)

H3: Immigrant youth are more likely to form same-generation friendships in schools with *lower* proportions of immigrant youth (competition theory)

Methods

The participants in this study were drawn from the Wave I in-school sample of the 1994-1995 National Longitudinal Study of Adolescent to Adult Health (Add Health), Data were excluded if they 1) were missing an individual identifier, 2) were missing a school identifier, 3) were single-sex schools, 4) were associated with schools with lower than a 75% survey completion rate (see Moody (2001) and Schaefer, Simpkins, Vest, and Price (2011)), and/or 5) were associated with schools where less than 5% of the school population was from an immigrant family. The fourth criterion is required to ensure reliable estimates of network measures based on data collected from friendship nominations, as missing data can bias network-based measures (Borgatti et al., 2006; Costenbader & Valente, 2003). In addition, the fifth exclusion criterion is included to ensure unbiased immigrant generation parameter estimates that would result if schools with too few immigrant youth were included. The final sample includes 43,123 youth in 63 schools.

Included schools are representative across four major regions of the United States (West, 25%; Midwest, 14.%, South, 33%; Northeast, 19%). On average, first-generation students comprised 6.89% (SD=9.50) and second-generation students comprised 12.68% (SD=9.15) of the student population. As schools with fewer than 5% of an immigrant population were excluded from the analytical sample, the sample of schools tended to have higher averages of immigrant youth and youth of color in comparison to the full

sample. The average school size was 923 students though there was great variation in school size within the sample (SD=717).

Missing data in network studies occur through two separate means: missingness by study design and missingness due to participant non-response. In the first case, students might nominate friends outside the school, and as a result there is no corresponding attribute data associated with those friends due to the design of Add Health data. Additionally, students might nominate other friends within the school who did not complete the survey or are missing on some study questions. Approaches to handling missing data vary across studies (Lusher, Koskinen, & Robins, 2013); the approach followed in this study is similar to the previous research of Goodreau et al. (2009) by excluding missing data by design and adding an additional category for missing data on each attribute (not shown in study analyses).

Measures

Four demographic variables are included as attribute-based predictors of youth friendship: gender, grade, immigrant generation, and race/ethnicity. Gender is measured as a binary variable (1=female) and grade level (6-12) is measured as a categorical variable (one category for each grade 6-12). For race and ethnicity, youth are assigned a value in one of the five categories (mutually exclusive): White, Black, Asian, Hispanic (non-White), and Native American/Other. All Hispanic youth are assigned to the Hispanic category, regardless of race, while those who report mixed status are recorded in "Other". Immigrant generation is determined using the birthplaces of the parents and children participants. Foreign-born youth with parents born outside the US are considered first-generation, native-born youth with both parents foreign-born are second-

generation, and third-generation are included with the native population (Greenman, 2011; Okamoto et al., 2013). Because Add Health data do not provide information on the length of time spent in the United States since arrival, further analyses of 1.5 or 2.5 generations is not possible. More nuanced analyses taking into consideration country of origin were not conducted both to maintain model parsimony and to prevent biased (or undefined) model parameter estimates resulting from the inclusion of youth in groups with low school-level representation.

Analysis

The analytical approach in both papers employs the use of network manipulation strategies available in the **statnet** package (Goodreau, Handcock, Hunter, Butts, & Morris, 2008; Handcock, Hunter, Butts, Goodreau, & Morris, 2008) as well as Exponential Random Graph Modeling (ERGM) using the **ergm** package (Hunter et al., 2008), both available in the R statistical suite. Exponential random graph models (ERGMs) refer to a family of statistical models used to model relationships in network data (Borgatti, Everett, & Johnson, 2013; Robins, 2011). These models attempt to determine the degree to which the attributes (e.g. gender, race, ethnicity, income, etc.) of individuals or nodes in a network as well as the network processes – for example, triadic closure or network density – may play a role in predicting ties in a network. The unit of analysis in this case is not the individual, but rather the sets of ties between them (Robins, 2011). In the case of adolescent peer groups, a researcher might observe that males tend to nominate male friends and females vice versa, and hypothesize that adolescents have gender-homophilous tendencies (which they do – see McPherson, Smith-Lovin, & Cook, 2001). A researcher using an ERGM model to examine friendship patterns might ask,

"Given the set of possible friendships between youth in a social network, do we see more friendships between same-sex friends than we would expect if friendships were formed at random in the network?" Similar logic is used in this study: "Given all possible friendship combinations, do we see youth choosing to be friends with others of the same immigrant generation more than we would if those friendships occurred randomly?"

Results

Two separate analyses are conducted using Add Health data to examine the role of immigrant generation in the formation of youth friendships. The first study is an in-depth case study examining one immigrant-community school ("Ellis Island Academy"), followed by a second study that replicates the first case study across 63 schools in the Add Health dataset.

Study 1: Ellis Island Academy

The first study examines the friendships of immigrant youth attending "Ellis Island Academy" – a school with a highly diverse student body across racial, ethnic, and immigrant generation lines. The school's demographic context provides a unique opportunity to examine the roles that race, ethnicity, and immigrant generation play in the formation of youth friendships. Indeed, 38.7% of students are Hispanic, 22.3% are Black, 31.9% are Asian, and 5.7% are White or from another cultural background. Additionally, many of the students come from immigrant families: 21.5% are first-generation students born outside the US, 33.9% are second-generation students born inside the US to immigrant parents, and 41% – a plurality, but not a majority – are third-generation and native students born in the US to US-born parents.

As one might expect, friendships at Ellis Island Academy are largely defined by cultural background. Figure 5 presents graphical representations of friendship ties, color-coding each node with a corresponding attribute for race, ethnicity, and immigrant generation. While the importance of race in friendship formation has been well established both in Add Health data (Currarini et al., 2009; Goodreau et al., 2009; Moody, 2001b) and other sources of network data (Aboud et al., 2003; Rude & Herda, 2010), what the second graph to the right suggests is that immigrant generation may also play an important role above and beyond the effects of race in friendship formation.

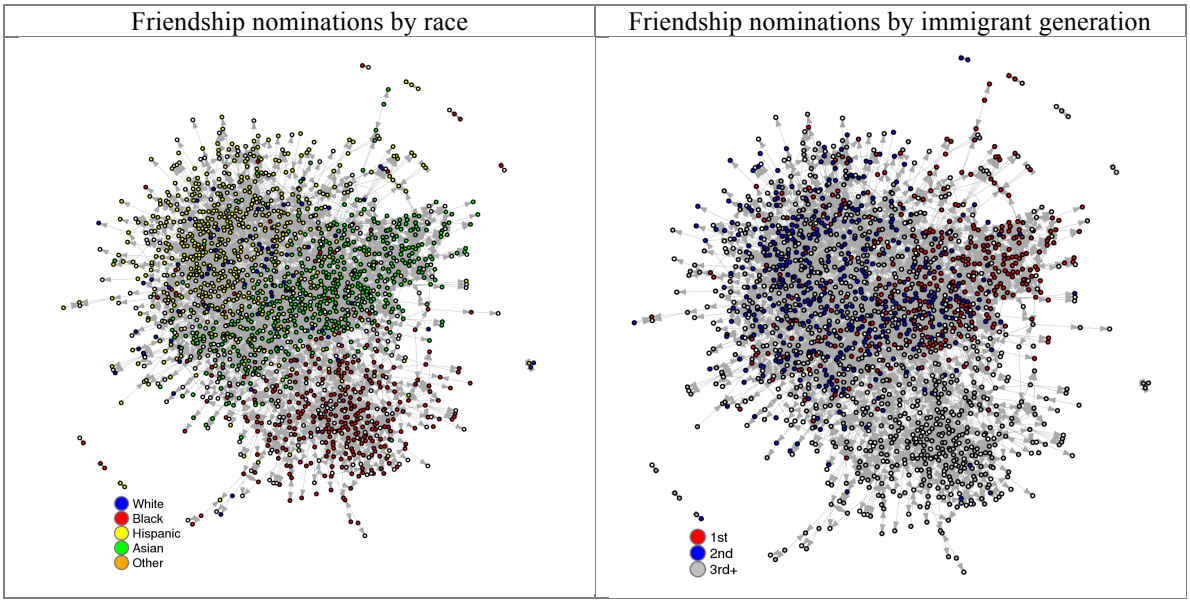

Figure 5. Network graphs of Ellis Island Academy Friendships

One way to examine the degree to which a particular attribute plays a role in friendship formation is to measure same-group, homophilous friendship ties as a proportion of all the friendship ties observed in the network. Figure 6 demonstrates homophilous outgoing ties for race, ethnicity, and immigrant generation – mathematically the proportion of

outgoing friendship nominations that went to a person with the same demographic characteristic. The highest levels of homophilous outgoing ties were among Asian, Black, and Hispanic youth, while White youth tended to have fewer same-race friendships. In addition, more homophilous ties were observed among third-generation and native youth in comparison to their first- and second-generation peers. One simple measure of overall tendency to form same-attribute ties is to examine the proportion of homophilous ties to all possible ties in the network. The overall proportion of same-race ties was .76, while the overall proportion of same-immigrant generation ties was .54, suggesting that race may be a stronger driver of friendship choices in this school as compared to immigrant generation.

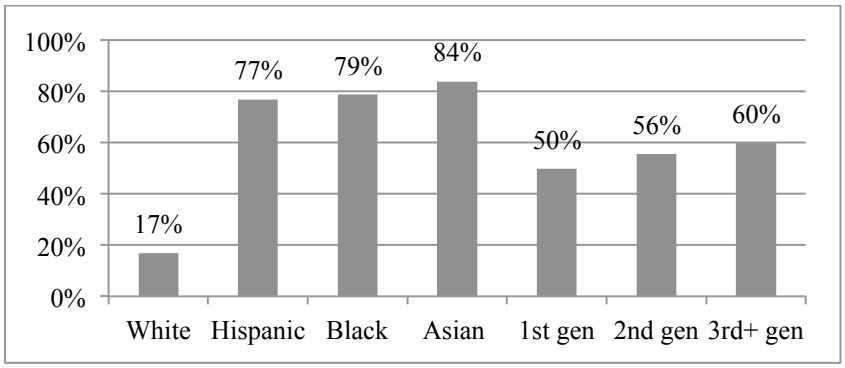

Figure 6. Proportion of same-group ties out of total friend group ties (degree)

The challenge with relying simply on the proportion of same-group ties is that friendships likely involve an overlapping of race, ethnicity, gender, social class, and immigrant generation – among other factors – and examining only one of these variables in isolation may result in confounding. The development of exponential random graph modeling (ERGMs) in network science is a particular approach to statistical modeling that will enable one to examine the network processes – both attribute-based and network-based –

that may account for friendship formation among youth while accounting for potential confounding variables (Hunter et al., 2008; Lusher et al., 2013; Robins, 2011) . ERGMs allow researchers to model simultaneously the various complex factors that give rise to the formation of social networks to examine the social processes that give rise to network formation.

ERGMs can be mathematically defined as follows:

$$P_\theta(G) = ce^{\theta_1 z_1(G) + \theta_2 z_2(G) + \cdots + \theta_p z_p(G)}$$

The probability that a given observed network can be explained as a function of network statistics (z) weighted by a parameter (θ) that represent particular network processes, like the likelihood of forming mutual ties, homophily, and triadic closure wrapped inside an exponential with a normalizing constant c (Lusher et al., 2013). Each of these parameters (θ) can be understood much like the coefficients of logistic regression, only the dependent variable represents the absence or presence of a friendship. These individual parameter estimates can lead insight into questions such as whether or not boys or girls are more likely to form a tie, or whether a tie is more likely to occur between youth who share a friend in common.

Table 7 presents two such ERGM models using the network data from Ellis Island Academy. In the first model, two types of parameters are estimated: first, an edges parameter, which is simply the likelihood of one person making a friend with any other member of the school, and second, a sociality parameter, or the likelihood that a youth with a particular characteristic will form a friendship. The edges parameter can be interpreted much like the intercept of a logistic regression, and generally is theoretically less interesting than the remaining parameters. A sociality parameter is then estimated for

each of four demographic characteristics: gender, grade, immigrant generation, and race/ethnicity. Each parameter represents the likelihood of forming a tie as compared to the reference group for each category, which in this model is defined as youth who are male, in grade 10, 3rd generation/native, and white for each of these categories, respectively. In this first model, both female youth (OR=1.11, CI=1.06=1.15) and youth

Table 7: Dyadic-independent ERGM, Ellis Island Academy

	DA: Model 1		**DA: Model 2**	
	OR	*CI*	*OR*	*CI*
Network predictors				
Edges	<.001***	0-0	<.001***	0-0
Sociality				
Gender: Female	1.11***	1.06-1.15	0.89*	0.79-1
Grade: 11	1.13***	1.08-1.18	1.34***	1.22-1.48
Grade: 12	1.16***	1.11-1.22	1.12*	1.02-1.23
2nd generation	1.18***	1.11-1.24	1.08	1-1.18
1st generation	1.09**	1.02-1.16	0.86***	0.79-0.94
Race/eth: Hispanic	1.62***	1.51-1.73	0.49***	0.44-0.55
Race/eth: Black	1.55***	1.45-1.66	0.33***	0.3-0.37
Race/eth: Asian	1.99***	1.84-2.15	0.47***	0.42-0.53
Race/eth: Other	1.59***	1.35-1.88	0.92	0.78-1.1
Homophily				
Gender: Male			1.21**	1.06-1.37
Gender: Female			1.74***	1.51-1.99
Grade: 10			6.28***	5.54-7.13
Grade: 11			3.35***	2.92-3.83
Grade: 12			6.27***	5.42-7.24
3rd generation +			1.17**	1.04-1.32
2nd generation			1.32***	1.17-1.49
1st generation			2.22***	1.92-2.57
Race/eth: White			1.83**	1.19-2.8
Race/eth: Hispanic			3.77***	3.29-4.33
Race/eth: Black			13.53***	11.2-16.35
Race/eth: Asian			6.46***	5.6-7.46
Race/eth: Other			1.63	0.5-5.32
Log-likelihood	-43492.83		-39761.05	
BIC	87006		79870	

*** p <.001 ** p <.01 * p <.05

in higher grades (OR=1.13, CI=1.08-1.18; OR=1.16, CI=1.11=1.22) were more likely to form friendships, – a common finding in network studies of youth (McPherson et al.,

2001; Moody, 2001b). Additionally, sociality varied across ethnic group and immigrant generation, with Asian youth being the most likely to form friendships (OR=1.99, CI=1.84-2.15) and both first (OR=1.09, CI=1.02-1.16) and second-generation (OR=1.18, CI=1.11-1.24) youth slightly more likely to form friendships than their third-generation peers.

The second model then adds a series of homophily parameters, which examine the likelihood that a friendship is formed between two youth sharing the same demographic characteristic. In contrast to the sociality parameter, there is no need for a reference group as each term is compared to non-homophilous friendships for each characteristic. Again, consistent with other areas of research, adolescent friendships at Ellis Island Academy are a gendered phenomenon and take place and occur often within-grade level. Across race and ethnicity, great variation was observed: Black (OR=13.53, CI=11.20-16.35) and Asian youth (OR=6.46, CI=5.6-7.46) were much more likely to form within-group friendships than their Hispanic (OR=3.77, CI=3.29-4.33) and White (OR=1.83, CI=1.19-2.80) peers. Finally, youth also tended to form friendships by immigrant generation, controlling for same-category friendships on gender, grade level, and race, with first-generation youth (OR=2.22, CI=1.92-2.57) most likely to form in-group ties but also followed by second (OR=1.32, CI=1.17-1.49) and third (OR=1.17, CI=1.04-1.32) generation youth.

It is important to note that the sociality terms differ greatly from the first model, and are also interpreted differently. Sociality, when controlling for homophily, represents the likelihood that a youth will form cross-category friendships. In this second model, first-generation youth are 14% less likely to form friendships with other non-first-

generation youth (OR=.86 CI=.79-.94), while Hispanic, Black, and Asian youth were also less likely to form cross-race friendships compared with their White peers (all significant at $p<.001$). To summarize both models, both race and immigrant generation are highly predictive of youth friendship nominations at Ellis Island Academy.

Study 2: Full sample of 63 Schools with immigrant populations in Add Health

The first study illustrated how ERGM models can be used to examine how the attributes of individual youth may be driving friendship formation in one school with a diverse student population. However, the results of one school are highly context specific; it may well be the case that students with one characteristic engage in much more (or much less) sociality or selectivity in their friendship formation at one school as compared to another social context. In the second study, the same analytical strategy is applied to 63 schools across the Add Health dataset to examine whether patterns of sociality or selectivity occur across schools.

Traditional regression methods tend to rely on hierarchical or multilevel modeling strategies (Hox, 2010; Raudenbush & Bryk, 2002) to handle the violation of independence that arises when conducting regression on nested or clustered data – as is generally the case when examining students within schools. Statistical methods for the analysis of clustered network data, however, are still in their infancy. What is common across studies that have examined multiple networks simultaneously is that researchers first analyze networks at the "micro" level – just as was outlined in Study #1 – and then compare the ERGM parameter estimates derived from each school across all networks. Some studies have used techniques similar to meta-analysis to compare these parameter estimates (Snijders & Baerveldt, 2003) while others have reported the median of the

distribution of the network parameter estimates (Goodreau et al., 2009; Young, 2011). This study follows a similar approach to the latter, first developing 63 individual ERGM models fit to each school, deriving estimates and standard errors for each parameter, and then taking the median and 1st and 3rd quartile ranges of the parameter estimates across all schools for comparison. Table 8 presents the results of this approach, and is accompanied by odds ratios of the median value for ease of interpretation. Finally, Table 9 presents the

Table 8: ERGM estimates (means of OR and CI) across 63 schools

	DA: Model 1			**DA: Model 2**		
	Median Estimate	*1st & 3rd Quartile*	*Median Odds Ratio*	*Median Estimate*	*1st & 3rd Quartile*	*Median Odds Ratio*
Network predictors						
Edges	-6.08	[-7.05,-5.47]	0-0.01	-6.19	[-6.84,-5.68]	0-0.01
Sociality						
Gender: Female	0.21	[0.10,0.31]	1.23	0.10	[-0.08,0.16]	1.10
Grade 8	0.26	[-0.92,0.35]	1.29	-0.12	[-0.69,0.18]	0.88
Grade 9	0.32	[-1.79,1.05]	1.37	-0.45	[-0.88,0.20]	0.63
Grade: 10	0.30	[-1.83,1.00]	1.34	0.23	[-0.84,0.50]	1.26
Grade: 11	0.31	[-1.69,0.94]	1.37	0.35	[-0.83,0.61]	1.42
Grade: 12	0.28	[-1.59,0.93]	1.33	0.13	[-0.87,0.45]	1.14
2nd generation	0.02	[-0.03,0.12]	1.02	-0.56	[-0.82,-0.24]	0.57
1st generation	-0.11	[-0.30,0.00]	0.90	-0.68	[-1.13,-0.31]	0.51
Race/eth: Hispanic	0.03	[-0.09,0.27]	1.03	0.04	[-0.23,0.20]	1.04
Race/eth: Black	0.03	[-0.13,0.25]	1.03	-0.20	[-0.50,-0.04]	0.82
Race/eth: Asian	0.05	[-0.08,0.23]	1.05	-0.01	[-0.19,0.22]	0.99
Race/eth: Other	0.04	[-0.07,0.18]	1.04	0.11	[-0.07,0.32]	1.11
Homophily						
Gender: Male				0.36	[0.21,0.48]	1.43
Gender: Female				0.36	[0.21,0.55]	1.43
Grade 7				2.17	[1.75,2.95]	8.78
Grade 8				2.06	[1.82,2.51]	7.82
Grade 9				2.74	[2.27,3.24]	15.52
Grade: 10				1.85	[1.62,2.57]	6.37
Grade: 11				1.78	[1.52,2.00]	5.92
Grade: 12				2.36	[2.09,2.54]	10.54
3rd generation +				-0.59	[-0.92,-0.28]	0.56
2nd generation				0.53	[0.23,0.86]	1.70
1st generation				1.17	[0.72,2.26]	3.23
Race/eth: White				0.44	[0.05,0.98]	1.55
Race/eth: Hispanic				0.66	[0.10,1.18]	1.93
Race/eth: Black				2.13	[1.39,2.88]	8.44
Race/eth: Asian				1.40	[0.82,2.00]	4.07
Race/eth: Other				0.10	[-0.07,0.43]	1.10

percentage of schools that have significant parameter estimates for each term. Values of 100% would indicate that individual ERGM models for each school were significant on that parameter.

As in Study #1, a model estimating sociality parameters is first estimated, followed by a model that includes homophily parameters. In the first model, female students as well as students in higher grade levels tended to nominate more friends. However, the race/ethnicity and immigrant generation parameter estimates hovered near zero (see Table 8) indicating that it is unlikely that either race/ethnicity or immigrant generation emerge as drivers of sociality across most schools.

The results of the second model, which includes the homophily parameters, reveals patterns that appear to occur across school contexts. Friendships tend to occur among youth of the same gender and grade level, with friendships being most selective within the same grade level. Black (MOR=8.44) and Asian (MOR=4.07) youth were most likely to nominate same- race friends, while White (MOR=1.55) and Hispanic (MOR=1.93) youth had less selective friendship patterns. Results from table 9 similarly indicate that homophily parameters for White, Black, Hispanic, and Asian were significant across most schools, with the most significant parameters for Black youth (85%) and the least for Hispanic youth (64%). Friendships were also formed across immigrant generation: while first (MOR=3.23) and second (MOR=1.70) generation students were more likely to form within-group friendships, 3rd generation and native youth were on average (median) actually less likely to form same-generation ties across all schools (MOR=.56), indicating that in the context of schools with immigrant populations, third-generation and native youth tend to form out-group friendships with

their first- and second-generation immigrant peers. Comparing odds ratios across race and immigrant generation, the odds of first-generation youth forming same-immigrant generation friendships are comparable to the odds of forming a same-race friendship,

Table 9: Percentage of significant ERGM estimates across 63 schools

	DA: Model 1	**DA: Model 2**
Network predictors		
Edges	1	1
Sociality		
Gender: Female	87%	41%
Grade 8	85%	62%
Grade 9	95%	76%
Grade: 10	98%	86%
Grade: 11	98%	88%
Grade: 12	98%	83%
2nd generation	42%	88%
1st generation	51%	86%
Race/eth: Hispanic	61%	60%
Race/eth: Black	60%	60%
Race/eth: Asian	45%	42%
Race/eth: Other	52%	52%
Homophily		
Gender: Male		78%
Gender: Female		73%
Grade 7		100%
Grade 8		98%
Grade 9		100%
Grade: 10		100%
Grade: 11		100%
Grade: 12		100%
3rd generation +		84%
2nd generation		60%
1st generation		86%
Race/eth: White		67%
Race/eth: Hispanic		64%
Race/eth: Black		85%
Race/eth: Asian		77%
Race/eth: Other		20%

with the exception of Black youth. Results from Table 9 suggest that parameter estimates for immigrant generation were significant in 84% and 86% of schools for third- and first-generation youth, respectively, while the parameter estimate was significant for second-generation youth in roughly two-thirds of schools. For first-generation youth, whether or

not one is born in the United States may play as an important of a role in friendship formation as race and ethnicity.

The sociality terms in the second model, as described in the Ellis Island example, represent the likelihood of forming a friendship after controlling for homophily – in other words, the likelihood of forming an out-group friendship. Most odds ratios hover near one and likely do not indicate a relationship one direction or another, with the notable exception of immigrant youth. First (MOR=.51) and second (MOR=.57) generation youth are less likely to form cross-generation friendships than their third-generation peers in the context of schools with immigrant populations. Youth of a particular racial or ethnic group are no more likely to form more out-group friendships than youth of other racial and ethnic backgrounds.

It is also possible that the tendency toward same-group friendships depends on school-level factors. To examine this possibility, model estimates for first, second, and third-generation plus youth for each of the 63 schools were plotted against two school-level characteristics: the percentage of immigrant students and the percentage of students of color who make up the student population. Figure 7 presents these relationships represented as a scatterplot and a regression line, with each point representing one school and each line representing the linear relationship. The red scatter plot and regression line represents the model estimates for first-generation youth, the blue for second-generation, and the black for third-generation and native youth. For first-generation youth, percent immigrant students (β = -4.30, p < .01, Adj. R^2=.19) and percent students of color (β = -1.75, p < .01, Adj. R^2=.20) each predict the first-generation homophily coefficient for each school. Across both models, as the number of students who identify as immigrants

and students of color increases, first-generation immigrant youth are less likely to nominate same-group friendships. A similar relationship can be observed for second-generation youth, such that increasing diversity is associated with decreased tendency toward homophily. However, the relationship for third-generation youth was the

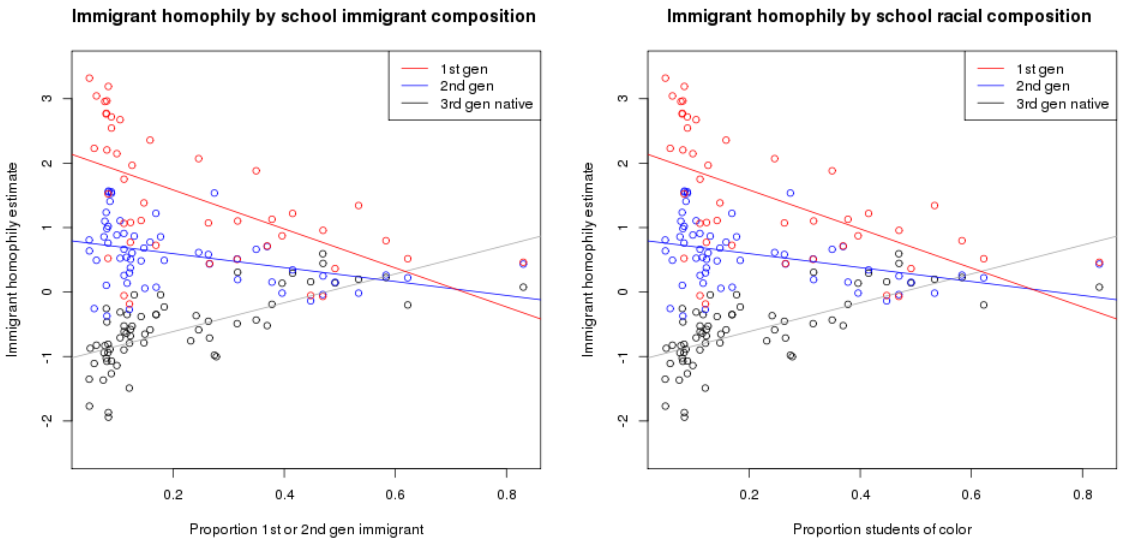

Figure 7. Homophily by school composition

opposite: as the diversity of the school increases, third-generation and native youth are more likely to nominate same-group friendships, controlling for the homophily effects of race, gender, and grade level.

Limitations

A limitation to the analyses presented in this study is that they represent demographic-attribute models, which means that the only factors used to model the network are the individual attributes of the nodes that compose the model. Not included are parameters that represent network processes – for example, triadic closure or density – that may also help explain network formation. Previous research indicates that demographic-attribute models may not develop as strong a model fit as those that include

parameters that represent network parameters when working with Add Health (Goodreau et al., 2009) and Facebook data (Wimmer & Lewis, 2010). These goodness-of-fit approaches aim to compare networks simulated from the parameters based on the model identified in the study and compare these simulations to the observed data. Goodness-of-fit statistics run on the models presented in this research indicated that in some areas the demographic-attribute models fail to fully capture the complete picture of network processes that could give rise to the formation of youth friendship networks. Figure 8

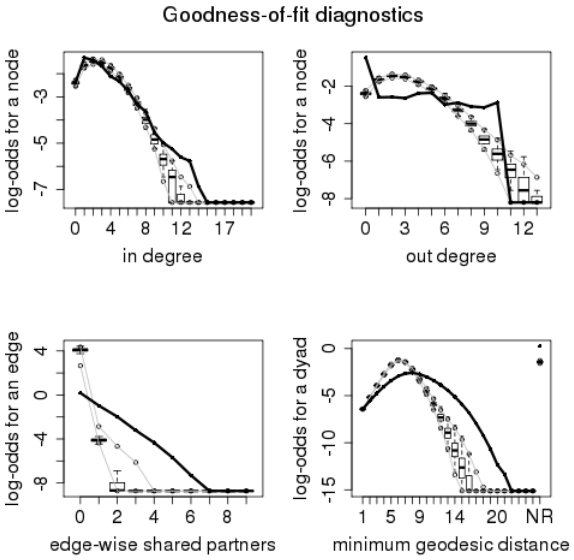

Figure 8. Goodness of fit plots, Model #2, Ellis Island Academy

summarizes these findings for the models for Ellis Island Academy by comparing the network statistics as observed vs. 100 simulated network statistics based on the model identified in the study analyses. While degree distributions approximate the observed data, the models do not adequately account for network processes like triadic closure as represented in the graphs for edge-wise shared partners and minimum geodesic distance. While it is important to acknowledge this limitation, the primary objective of this study

was to examine how immigrant generation may predict the likelihood of nominating a friend (sociality) and the likelihood of nominating a friend of similar background (homophily) – such that examining all network processes that could predict friendship formation is beyond the scope of this study.

Discussion

The main goal of this study was to examine the drivers of friendship formation for youth in immigrant school communities, and to focus on the role that immigrant generation plays in the formation of youth friendship networks. The results of this study contribute to the increasing base of literature that focuses on the responses of school communities to the increasing cultural and linguistic diversity of American schools (Lichter, 2013; Scanlan & López, 2014).

A primary contribution of this study is that immigrant generation contributes to the formation of youth friendships in school settings above and beyond the effects race, ethnicity, gender, and school grade. While previous literature on friendship formation has focused on race and ethnicity as drivers of friendship formation (Currarini et al., 2009; Doyle & Kao, 2007; Goodreau et al., 2009; Kao & Vaquera, 2006), the evidence from this study suggests that immigrant generation is also a key player in determining the friendship choices of immigrant youth. Compared to third-generation and native-born youth, second-generation youth were on average twice as likely to nominate another second-generation youth as their friend, while first-generation youth were roughly six times as likely to do so. Moreover, because the magnitude of the relationship for first-generation youth is comparable to estimates for race and ethnicity, this evidence also

suggests that immigrant generation may play an equally important role in friendship formation among first-generation youth.

An additional finding of this study was that third-generation and native youth in the context of immigrant schools were less likely to form same-generation friendships than their immigrant peers – in other words, native youth tended to choose first and second-generation youth as their friends, controlling for race and ethnicity. While this dynamic may suggest that third-generation youth are a particularly welcoming crowd, these results need to be interpreted in the context of other friendship processes that are likely taking place in youth friendship networks. Same generation friendships by third-generation youth may already be accounted for in the model as same-race friendships, suggesting that when native youth are making cross-generation friendships they tend to be formed with youth of another race or ethnicity. It also follows that youth may be preferring to form friendships with youth of a similar race or ethnicity – even if differing by immigrant generation – than to form cross-racial or cross-ethnic friendships. Thus, immigrant generation may play inverse roles for third-generation and native youth as compared to their first- and second-generation peers in the process of friendship formation.

A second contribution of this study was to examine how school contexts may be associated with the propensity to form homophilous ties along immigrant generation. Previous research has pointed to opportunity and contact theory (Allport, 1954; Pettigrew, 1998), which surmises that contact with out-group members increases the likelihood of positive out-group attitudes (and by extension increases the possibility of friendship formation), as a potential explanation for friendship formation along racial,

ethnic, and immigrant lines (Hamm et al., 2005; Vervoort et al., 2011). Conversely, another body of research drawing from competition theory suggests that as the size of the smaller/minority group grows, the larger/majority group perceives threat and as a result ethnic tensions increase and cross-group friendships decrease (Bobo & Hutchings, 1996; Savelkoul et al., 2011). This study tested these competing theories by plotting the relationship between model homophily estimates to school-level indicators of racial and immigrant composition. As the proportion of students of color and the proportion of students of immigrant background increased, the tendency of first (and to some extent second) generation youth to choose friends of similar immigrant generation decreased, while the tendency of third-generation and native youth to engage in homophily increased. In other words, as schools become more diverse, immigrant generation plays a less prominent role in friendship formation and more cross-generation friendships are formed, leading to more highly integrated school communities.

These results suggest some support for contact theory as an explanation of the relationship between school composition and cross-generation friendship. If competition theory were represented in the data, there would be greater variance among the homophily estimates when school diversity increased, which was not the case across any of the three generation levels. One possible explanation may be that as youth are exposed to more youth of diverse cultural backgrounds and immigrant generation levels, they are more likely to have positive out-group feelings and in turn extend more offers of friendship to first-generation youth. On the other hand, it may also be that first-generation youth witnessing more cross-generation friendships are in turn more likely to engage in such friendships themselves. Further research could explore how changes in

school composition on a macro level may impact micro-level friendship choices and mezzo level network position.

An additional finding of this study is that immigrant youth – when positioned in schools where immigrant youth make up at least 5% of the school population – are no less likely to make friends than their third-generation and native peers. This finding provides additional support to the mounting evidence that the story of immigrant integration is a successful one (Waters & Gerstein Pineau, 2015). While first-generation students at times may be positioned on the social margins of friendship networks (see Chapter 2 of this dissertation), by and large, immigrant youth are integrating into school communities, building relationships, and participating in the social life of schools on par with their peers despite the difficult challenges associated with being a newcomer in an unfamiliar social context.

While the focus of this study was on immigrant generation, results are consistent for racial homophily with previous research using Add Health data (Currarini et al., 2010; Goodreau et al., 2009; Moody, 2001b). Readers should consult these sources for a more nuanced discussion of differences in homophily parameters by race and ethnicity. Nevertheless, it should be noted that this research highlights the importance of social context when examining friendship choices. For example, across the schools in this study Black youth were much more likely to form same-race friendships. However, other research suggests that this may be due to the lower percentage of Black youth in schools compared to other groups, particularly White youth. When these patterns are reversed (i.e. when White youth are in the minority), White youth actually have higher homophily parameter estimates than their Black peers. Thus, the tendency to form same-race

friendships should not be viewed as a universal characteristic of a particular racial group, but rather be viewed as the result of students making individual friendship choices constrained by the local social contexts in which they are embedded.

Implications

While this study focuses on how immigrant generation is associated with friendship formation, the findings also have important implications for school teachers, administrators, and practitioners aiming to reduce friendship segregation across racial and ethnic lines within school settings. Currently, there are few examples of internally valid and externally generalizable interventions that successfully reduce prejudice and promote intergroup friendship formation (Paluck & Green, 2009). Some approaches that have shown success include peer-led interventions (Paluck, 2011) and interventions like the Common Ingroup Identity Model (Gaertner & Dovidio, 2012) which focus on highlighting common interests across different groups. Other observational research has documented the ability of peers to influence each others' attitudes regarding cross-group friendship formation and tolerance – for example van Zalk, Kerr, van Zalk, and Stattin (2013) found that youth can influence each other's attitudes towards immigrants – both by influencing their peers to become more xenophobic as well as more tolerant of immigrants. What this study contributes to current interventions in this area is the idea that in particular school contexts immigrant generation may play a role on par to that of race and ethnicity in determining friendship formation and intergroup friendship, and may need to be explicitly considered when developing interventions to increase intergroup friendship formation. For example, the finding in this study related to the diversity of one's school context and the strength of homophily tendencies suggests that

immigrant youth in schools with smaller immigrant populations will likely form friendships differently than they would in more racially and ethnically diverse school settings, and may benefit from interventions that are targeted to meet the particularities of an individual schools' social context. Future interventions in this area should look closely at how the experience of immigration intersects with other identities and interacts with processes of friendship and group identity formation.

More broadly, this study contributes to the literature focused on the legacy of *Brown vs. the Board of Education* and the role that racial segregation plays in American schools. Recent research linking racial disparities in educational opportunities as well as outcomes to school segregation (Gándara, 2015; Orfield & Frankenburg, 2014) suggests not only that school segregation is on the rise but that it is having important consequences on the social and educational wellbeing of youth. The results from this study suggest that such research should continue to explore how immigrant generation interacts with race and ethnicity to place some youth in positions of advantage while simultaneously relegating others to the social margins. Such research will help advance the goal of building an education system that promotes the healthy development of all youth.

Chapter IV: Immigrant generation, language use, and network processes as predictors of friendship formation in a culturally and linguistically diverse school

Abstract

This study examines the role of immigrant generation and spoken language in the process of friendship formation. Using cross-sectional and longitudinal data from one multicultural school from the saturated sample of the National Longitudinal Study of Adolescent to Adult Health (Add Health), exponential random graph (ERGM) and stochastic actor-based (SABM) models are used to estimate the degree that immigrant generation and spoken language contribute to friendship formation, controlling for relevant endogenous (attribute-based) and exogenous (network-based) predictors. Both immigrant generation and language spoken in the home emerge as significant exogenous predictors of friendship formation in both cross-sectional and longitudinal models. Results of the interaction effects of triadic closure on both race/ethnicity and immigrant generation suggest that the process of triadic closure operated similarly across cultural groups in this school setting. Results highlight the importance of examining immigrant generation and spoken language in youth friendship formation.

Introduction

School populations in the United States are becoming more culturally and linguistically diverse. As national demographic trends presage the changing demographic landscape of youth in the United States (Passel, 2011), school administrators, teachers, counselors, social workers, parents, and all who work with youth will be called upon to participate in school contexts that may appear very different from the social contexts in which they themselves were raised. Indeed, this "New Mainstream" of students characterized by greater cultural and linguistic diversity attend and will attend schools a social context where diversity is the norm rather than the exception (Scanlan & López, 2014).

One might be quick to assume that more cross-cultural interactions, fewer cultural divisions, and greater inclusivity will accompany the increasing diversity of youth in the United States. However, trends toward increasing segregation in US schools (Orfield & Frankenburg, 2014) and a lack of investment in youth have led researchers to call for greater integration in (and greater investment in) schools and organizations working with youth of all cultural backgrounds (Alba, Sloan, et al., 2011; Lichter, 2013). As schools become more culturally and linguistically diverse, social and cultural forces along lines of gender, race, ethnicity, birthplace, and language ability may play an increasingly important role in the healthy developmental trajectories of adolescents. Friendships formed in these social contexts may in turn function to place youth in differential social positions leading to greater inequality along social and cultural lines.

The purpose of this study is to examine the friendship networks of youth in a multicultural school context. While other studies in this dissertation examined the role of

immigrant integration both within and across school settings (see Chapters 2 and 3), this study contributes to the literature by examining specifically how immigrant generation and language spoken in the home contribute to the process of friendship formation using both cross-sectional and longitudinal methods of network analysis in a multicultural school setting.

Theoretical Framework

The approach taken in this study to the study of youth friendships is informed by social and psychological theories of human development and interaction. Peer friendships offer a social context in which individuals engage in bi-directional interactions, or proximal processes, with their social environment that in turn shape and produce trajectories of development (Bronfenbrenner & Morris, 2006). Through interactions with peers, youth both construct and are constructed by their social environments, retaining the capacity for individual agency while also constrained by their social contexts (Bandura, 2006). Peer friendships can also be understood to take place in the context of networks, which represent the sum set of friendships that occur in a given social contexts. Theories of social networks understand individuals to be rational actors engaged in processes of exchange with others (Blau, 1964; Coleman, 1994), whose position and decisions within networks are the result of individual choice, structural constraints, and random events.

Of primary interest in this study is the process of social selection, or homophily, which describes the degree to which individuals choose to associate with others like themselves. It is argued that youth make friendship decisions based on traditional measures of social and cultural difference, and that two less-studied factors – including

immigrant generation and language spoken in the home – can play important roles in the decisions that youth make with respect to friendship in multicultural school settings.

Literature Review

A common finding across the literature on social networks is the observation that individuals are more likely to form relationships with others with similar characteristics. Homophily can be observed across a wide variety of social characteristics, including race, ethnicity, age, religion, education, occupation, and gender (McPherson et al., 2001). Race and ethnicity emerge as primary drivers of friendship formation (Currarini et al., 2009; Goodreau et al., 2009; Moody, 2001b), with some evidence suggesting that ethnic relations within racial categories are also integral to understanding friendship choice in multicultural youth settings (Kao & Joyner, 2004, 2006; Kao & Vaquera, 2006). In research on youth networks, youth have been observed to choose friendships based on risk factors such as smoking and obesity (Mercken et al., 2012; Schaefer & Simpkins, 2014) as well as academic achievement (Flashman, 2012), friendship motivations (Ojanen, Sijtsema, Hawley, & Little, 2010) goal orientations (Duriez, Giletta, Kuppens, & Vansteenkiste, 2013) and extracurricular activities (Schaefer et al., 2011).

Most studies examining cultural factors associated with youth friendship formation in the United States and Canada focus on race and ethnicity (Aboud et al., 2003; Aboud & Sankar, 2007; Graham et al., 2014; Shrum et al., 1988) while those in Europe focus on ethnic immigrant groups (Fortuin et al., 2014; Reitz et al., 2015; Smith et al., 2014). Other areas of research are less concerned with how friendships are formed, but rather examine the consequences of same-group vs. cross-group friendship for a variety of psychosocial, educational, and health related outcomes (Cavanagh, 2007;

Dipietro & McGloin, 2012; Goza & Ryabov, 2009; Riegle-Crumb & Callahan, 2009; Suárez-Orozco et al., 2009). However, current research has not previously examined race, ethnicity, immigrant generation, and language proficiency together to examine how each of these cultural identifiers contributes to the formation of youth friendships or the integration and/or stratification of youth in school settings.

Immigrant generation, language ability, and friendship formation

As youth in the United States continue to become more culturally and linguistically diverse (Passel, 2011), increasing attention is being given to how youth from immigrant families are negotiating school contexts and in turn how school communities are responding to changing student populations (Alba, Sloan, et al., 2011; Scanlan & López, 2014). With respect to outcomes, immigrant youth often fare better than their second- and third-generation counterparts – a concept known in the literature as the "immigrant paradox" (Crosnoe, 2012; Salas-Wright et al., 2015). However, less is known about how immigrant generation and language ability work alongside the social-cultural forces of race and ethnicity to guide friendship formation in youth populations. Research suggests that, on one hand, lack of English language proficiency and identity as an immigrant may place youth at risk for social marginalization (Steinbach, 2010; Tsai, 2006). On the other hand, some research has found that youth who speak a language other than English at home may be no more likely to experience bullying or social marginalization (Mishna, Cook, Gadalla, Daciuk, & Solomon, 2010).

Immigrant youth make friendships both within and across cultural group lines. While immigrant youth often make within-group friendships (Smith et al., 2014) (see also chapters 2 and 3) factors such as length of time in the US alongside English language

facility may be associated with greater cross-group friendships (Hamm et al., 2005). Youth who choose cross-group friendships have more inclusive norms and improved intergroup attitudes (Chen & Graham, 2015; Tropp et al., 2014). This area of research often weighs the benefits of same-group friendship identification for outcomes such as positive self-regard (Graham et al., 2014), academic support (Suárez-Orozco et al., 2009) and social capital (Stanton-Salazar, 1997, 2004) with the social benefits of inclusivity and greater cultural integration (Smith et al., 2014; Windzio, 2015).

School culture and peer relationships may provide important opportunities for youth from immigrant backgrounds to develop English language capacity and negotiate the social world of US school settings (Carhill, Suárez-Orozco, & Paez, 2008). Immigrant youth are connected to family structures that also interact with school environments: in one study, for example, Windzio (2015) found that parents' decisions about which families to invite to their child's birthday party was associated with whom the child chose in friendship. In other words, children are more likely to be friends with other children if their parents are also friends. Such transitive relationships and processes of social closure (Coleman, 1988) may also occur in other directions: if parents and youth become more connected to schools, perhaps they will in turn become more connected to each other. Thus, the degree to which immigrant parents are connected to (or marginalized from) school communities (Reynolds et al., 2015; Turney & Kao, 2009) may also contribute to youth friendship integration.

Research Question

This research study is guided by one primary research question: How are immigrant generation and spoken language associated with friendship formation in a

culturally and linguistically diverse school setting? This question use both cross-sectional and longitudinal methods to examine the roles that immigrant generation and spoken language play in the formation of and changes in friendship networks over time.

Methods

The sample for this study is drawn from the wave 1 in-school and wave 1 and wave 2 in-home samples of the 1994-1995 National Longitudinal Study of Adolescent to Adult Health (Add Health). The Add Health research design includes complete networks of 140 schools in the in-school survey followed by 16 schools whose friendship networks were observed in the wave 1 and wave 2 samples of the in-home survey. Of these three waves, only one school includes the friendship networks of a school population diverse in measures of race, ethnicity, immigrant generation, and language spoken at all three time points, providing a unique opportunity to examine these factors in a longitudinal context. For the purposes of this study, the school will be referred to as "Ellis Island Academy", and the waves of Add Health will be referred to as Wave 0: in-school survey, Wave 1: in-home survey 1, and Wave 2: in-home survey 2.

School characteristics

Ellis Island Academy is a culturally and linguistically diverse school located in a suburban context. Describe further Roughly one in four students are first-generation immigrants (24.6%) and nearly one in three second-generation immigrants (29.9%), while fully a third of students also report speaking a language other than English at home (32.1%). Table 10 provides a summary comparing race and ethnicity as well as language spoken across immigrant generations. Asian youth comprise most of the first-generation and a portion of the second-generation immigrants; Hispanic youth mostly second and

third-generation, with some first-generation, and Black youth represent the majority of the third-generation and native youth. First-generation youth are more likely to report speaking a language other than English at home ($\chi^2 = 321.6$, $p < .001$), while a large proportion of second-generation youth also report speaking another language at home. Students reporting White and Other for race and ethnicity represent a significant minority in this school population.

Table 10: School characteristics by immigrant generation (Wave 1, in-home survey)

	1st gen	2nd gen	3rd gen +	Total
Asian	17.3%	10.8%	5.3%	33.4%
Black	0.3%	0.2%	20.8%	21.4%
Hispanic	6.7%	18.3%	14.9%	39.9%
Other	0.1%	0.0%	0.3%	0.3%
White	0.3%	0.6%	4.2%	5.1%
Total	24.6%	29.9%	45.5%	100.0%
English	10.6%	16.0%	41.3%	67.9%
Other	14.0%	13.9%	4.2%	32.1%
Total	24.6%	29.9%	45.5%	100.0%

Ellis Island Academy is a high school including students from grades 10, 11, and 12. Table 11 presents the grade levels by student background at Wave 1. While there are some differences in race, ethnicity, and immigrant generation across the three grade levels, generally speaking each of the grade levels includes representative proportions of each group. Additionally, each grade level represents roughly one third of the student population. In the analyses this becomes particularly important in wave 2, in which the 12th grade students have graduated and leave the study and the resulting network is primarily between 10th and 11th (matriculated to 11th and 12th) graders.

Table 11: School characteristics by grade level (Wave 1, in-home survey)

	Grade 10	Grade 11	Grade 12
1st gen	7.9%	8.6%	7.9%
2nd gen	10.9%	9.6%	9.4%
3rd gen +	15.7%	16.4%	13.2%
Total	34.5%	34.6%	30.6%
Asian	10.0%	12.3%	11.1%
Black	7.2%	8.3%	6.0%
Hispanic	15.3%	12.6%	11.7%
Other	0.1%	0.1%	0.1%
White	1.9%	1.4%	1.6%
Total	34.5%	34.6%	30.6%

Analysis

First, network graphs across the three waves of friendship nominations data are presented to introduce and provide context for the research question. Next, cross-sectional exponential random graph models are conducted using the **ergm** package in R (Hunter et al., 2008; Morris, Handcock, & Hunter, 2008) at each of waves 0, 1, and 2 to examine the network processes and structure that underlie friendship decisions. Finally, a longitudinal stochastic actor-based model is presented using the **Rsiena** package in R (Ripley et al., 2016; Snijders et al., 2010) to model the network processes that account for changes in friendship formation between waves 0, 1 and 2 of the Ellis Island Academy friendship network data. The following describes how these two types of modeling are used to provide evidence to as to the role that immigrant generation and spoken language may play in the formation of youth friendships in a culturally and linguistically diverse school setting.

The exponential random graph model (ERGM)

ERGMs are particular approach to statistical modeling that enables one to examine the network processes that may account for friendship formation among youth (Hunter et al., 2008; Lusher et al., 2013; Robins, 2011). Conceptually, the goal of ERGMs is to take an observed network at a given time point and use a set of parameters (θs) to simulate a model of tie formation that most closely matches the observed network. ERGMs help researchers ask how the observed network came into being, and to inquire about the structural forces that led to its formation. Researchers use ERGMs to estimate particular structural forces – both exogenous (attribute-based, like one's race, ethnicity, or gender) and endogenous (network-based, like the tendency to reciprocate friendships) to the network – that would simulate a network similar to the observed network. This simulation process takes a Markov Chain Monte Carlo (MCMC) estimation approach that "searches" for a set of parameters that represent the degree to which exogenous and endogenous processes account for tie formation (Goodreau et al., 2009; Robins, 2011).

Implicit to the ERGM approach are a set of assumptions about network formation, and ultimately how individuals relate to their social environments. Perhaps most prominently, networks ties are understood to be *dependent* upon one another. The presence or absence of a tie in one area of the network affects the presence or absence of a tie in another. This positions ERGMs as distinct from many forms of traditional regression models that assume independence of individual cases. Additionally, observed patterns in networks (e.g. reciprocity, closure, etc.) are understood to represent ongoing structural processes that produce networks through both structured (i.e. predictable) and stochastic (i.e. random) mechanisms. These ongoing structural processes are assumed to

impact all actors in the network equally – conceptually known as the homogeneity assumption. More simply, all actors make decisions on tie formation according to the same set of rules and parameters. For details on the assumptions and theory of ERGM modeling, see Lusher, Koskinen, & Robins (2013).

ERGMs can be mathematically defined as follows:

$$P_\theta(G) = ce^{\theta_1 z_1(G) + \theta_2 z_2(G) + \cdots + \theta_p z_p(G)}$$

The probability that a given observed network can be explained as a function of network statistics (z) weighted by a parameter (θ) that represent particular exogenous and endogenous network processes. These networks statistics (θs) are then wrapped inside an exponential with a normalizing constant *c,* and can be understood much like the coefficients of logistic regression predicting absence or presence of a tie (Lusher et al., 2013). In this study, ERGMs can be used offer insight as to whether or not immigrant youth are more or less likely to form a tie, or whether or not immigrant youth are more likely to form a tie with another youth of the same immigrant generation. ERGMs are used here to estimates parameters of friendship tie formation at each of waves 0, 1, and 2 of Ellis Island Academy friendship data.

The stochastic actor-based model (SABM)

Fundamentally, networks are also changing and dynamic. Networks change as a function of the surrounding network, the other actors in that network, the ties that are formed in that network (e.g. friendship, among others like social support, advice, etc.), and individual choice and agency in making a tie. The stochastic actor-based model (SABM) (Snijders et al., 2010) builds upon the framework of ERGMs to focus not on the patterns that lead to the formation of network structure itself, but rather to center on the

changes in ties that occur across multiple panels of longitudinal network data to explain the structural forces that contribute to network formation.

SABM models rest on the assumption that networks change over time and that changes in the networks can be understood to occur through a series of mini-steps following a Markov chain process. Figure 9 presents an example of how the Markov process takes place: observations 1 and 2 represent the set of ties between actors

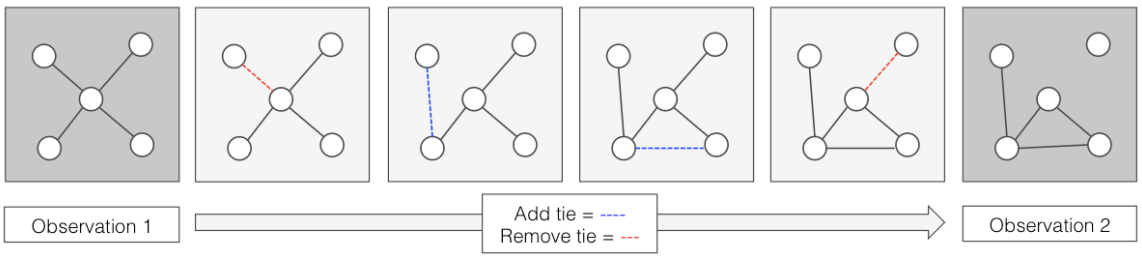

Figure 9. The Markov Chain process of friendship selection

as observed in the network at each of the respective time points. The Markov process demonstrates how network change processes can lead from one observed network to the next through a series of "mini-steps" or individual decisions made by actors to form or eliminate a tie. When considering youth friendships, the Markov chain process can be understood as representing the many decisions youth are making about their friendships throughout their development, representing the constant decision-making process of forming or removing friendship ties in response to their changing social environment. This process implies that actors are rational, have full information about the network, and make purposeful decisions about their ties in a social context governed by certain structural constraints (Snijders, 2011). This approach relies on the theoretical work of

methodological individualism (Udehn, 2002) in describing social phenomena, and is also reminiscent of Bandura's social cognitive theory (Bandura, 1989, 2006) and Coleman's work in purposeful action and rational choice (Coleman, 1994; Marsden, 2005).

The SABM in comprised of rate and objective functions. The rate function observes the average number of changes between observed networks – in other words, the number of mini-steps that take place in Markov Chain process outlined in Figure 9. The objective function is used to compare how "attractive" different types of tie changes are, and indicates how likely an actor is to change her network given the constraints of the social environment. The parameters of the objective function are generally of the greatest theoretical interest, as they represent the "short term" objectives of the rational actor's changes on the network, which include those actor's goals, the constraints of the network, and random changes.

Measures

Six exogenous actor covariates are used in both the cross-sectional ERGM and longitudinal stochastic actor-based models as attribute-based predictors of youth friendship: gender, grade, GPA, race/ethnicity, immigrant generation, and language. The variables are considered exogenous to the network as they are not a function of but rather act upon the network. Gender is measured as a binary variable (1=female) and grade level (6-12) is measured as a categorical variable (one category for each grade level). Because both ERGM and actor-based models require the inclusion of categorical or ordinal variables, student GPA was divided into quintiles based on students self-reported grade in math, language, science, and social studies. Youth are assigned a single value for race and ethnicity in one of the following five categories (mutually exclusive): White,

Black, Asian, Hispanic (non-White), and Native American/Other. All Hispanic youth are assigned to the Hispanic category, regardless of race, while those who report mixed race and ethnicity are recorded in "Other". Immigrant generation is determined using the birthplaces of the parents and children participants. Foreign-born youth with parents born outside the US are considered first-generation, native-born youth with both parents foreign-born are second-generation, and third-generation are included with the native population (Greenman, 2011; Okamoto et al., 2013). Because Add Health data do not provide information on the length of time spent in the United States since arrival, further analyses of 1.5 or 2.5 generations is not possible. Finally, language spoken is a binary measure of students' responses to whether or not they spoke a language other than English (=1) at home.

Endogenous measures include those that represent various network-based processes that account for friendship formation. Both ERGM and RSiena models use a measure of the propensity to form a tie at all ("edges" and "out-degree (density)", respectively), which is theoretically of less interest and functions in practice similar to the intercept of a traditional regression model. While the ERGM models use only exogenous or dyadic-independent predictors, four additional endogenous network-based parameters are included in the RSiena models: reciprocity, transitive triplets, 3-cycle, and out-degree popularity. Reciprocity refers to the propensity to reciprocate a friendship (i.e. i <- j and j -> i). Transitive triplets is a concept related to social closure (Coleman, 1988), and refers to the propensity to form a tie in order to "close" a triangle – in more colloquial terms, to be the friends with your friends. In Figure 1, this relationship is represented by the propensity of i to form a friendship with k, given that it would be a shared friend with

j. The 3-cycle parameter represents the opposite of this effect, which represents the propensity to make friends in a cycle. While adolescent friendships tend not to be observed in three-cycles, empirically the inclusion of this parameter allows for a more

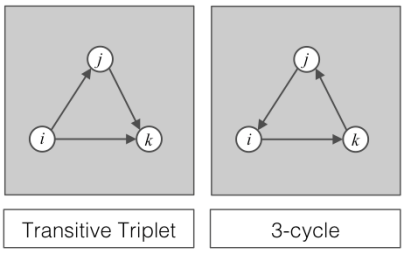

Figure 10. Transitive triplets and 3-cycles

stable result and interpretation of the transitive triplet parameter. Finally, out-degree popularity refers to the tendency to choose friends who are popular and well liked. Operationally, it refers to choosing popular friends with high in-degree, or who were more likely to receive friendship nominations.

Missing data

Missing data are of critical importance in the study of networks. Because data are understood to be dependent in nature, a missing actor from the network is not only a loss of her exogenous attributes but also the ties she makes to other actors in the network. Thus missing data are considered a particular challenge in network research and can lead to bias in results and reporting (Borgatti & Molina, 2003; Huisman & Steglich, 2008). It is also important to distinguish between structurally missing data and data missing due to non-response. For example, the senior class in waves 0 and 1 does not appear in wave 2 due to school graduation, and thus their departure from the network is understood to be structural. However, there were other youth at Ellis Island Academy who did not

participate in various parts of the survey, who did not complete the survey, or who gave dishonest answers. Regarding the latter of these three, there was empirical evidence in the wave 2 that two individuals received too many nominations for it to have reflected an honest set of nominations, and were thus removed from the analyses. It should also be noted, however, that individuals who were "missing" on attribute or network data are not, in fact, entirely missing from the survey: they could still receive friendship nominations from those who did fully participate in the study.

There are a variety of approaches to handling missing data, ranging from conducting complete case analysis to using different types of imputation methods (Borgatti & Molina, 2003; Huisman & Steglich, 2008). The approach taken in this study is described as follows. First, data were prepared at each wave for cross-sectional ERGM analyses. Data were manipulated to allow for the highest rate of response on student attribute data, including student gender, grade level, GPA, race/ethnicity, immigrant generation, and language spoken in the home. The advantage of using static demographic measures (with the exception of GPA) in panel data is that when students failed to report on one of these measures at one wave, their response from other waves were used to substitute for the missing information. This is particularly important with respect to immigrant generation, as students in the wave 0 in-school survey were much less likely to report their and their parents' country of birth as compared to later waves – and when they did report, they were more likely to report being second- or third-generation. This dynamic is likely due to the sensitive nature of this question and the fear students may have felt in reporting the birthplace of themselves or their parents. Thus, attribute data were maximized by replacing missing values on gender, race/ethnicity, and

immigrant generation from information from another wave, and using list-wise deletion for those missing across all three waves. Missing values on GPA were also imputed in a similar way, under the assumption that GPA across years is highly correlated. As language spoken in the home was constructed from the wave 1 in-home survey, there were no additional measures that could be used to impute missing values, though the percent missing on this variable was less than 1%.

After data were prepared for ERGM analyses, additional manipulation was conducted for the SABM longitudinal analyses. Discrepancies on reporting of demographic characteristics across the three waves was handled by creating a single "constant covariate" variable for each variable. When there were discrepancies between the waves, responses from wave 1 of the in-home survey were used. In-home responses are assumed to be more accurate than in-school responses as they were conducted via live in-person interview and accompanied by parent interviews. For the SABM analyses, only the cases that were complete across all waves were included, with others removed through list-wise deletion.

For each cross-sectional ERGM model, cases with complete attribute and friendship data were included in the analyses (w0 n= 1448; w1 n=1519 ; w2 n=853). For the longitudinal RSiena model, individuals with complete attribute and friendship data across all three waves were used (n=967). While it is acknowledged that taking a complete cases approach to RSiena analyses involves some limitations (such as unstable centrality measures, biased estimates, among others – see Huisman & Steglich, 2008), the complete cases approach was used to maintain as close fidelity to the observed data as

possible given the challenge of imputing demographic data on non-respondents and handling structurally missing respondents graduating at wave 2.

Results

A primary question addressed in this study is the relationship between immigrant generation and friendship formation above and beyond the associations of other factors, particularly race and ethnicity. Plotted visualizations of the friendship networks at all three waves offer insight into how these factors may be associated with the choices students at Ellis Island Academy make with respect to their friendships. Figure 11 presents the friendship nominations of wave 0 by race and immigrant generation. In the first graph, friendships are clearly demarcated by the three primary racial/ethnic groups at the school: Black (red), Hispanic (yellow) and Asian (green). Maintaining the same coordinates for each actor or individual student, the second graph demonstrates that immigrant generation is correlated with race and ethnicity – the area where Hispanic students are located is primarily second with some first-generation students, the area where Asian students are located is characterized both by first and second-generation students, and the area where Black students are is almost entirely third-generation. What these relationships suggest is that while race and ethnicity are primary drivers of friendship formation, it may also be the case that immigrant generation also drives friendships – or perhaps further demarcates friendship boundaries *within* rather than (or in addition to) *across* racially and ethnically defined components of the graph.

Similar patterns are noted at waves 1 and 2 in Figures 12 and 13, with important differences. Wave 1 appears similarly to wave 0, with clear distinctions between Black, Hispanic, and Asian students as well as first-, second-, and third-generation students.

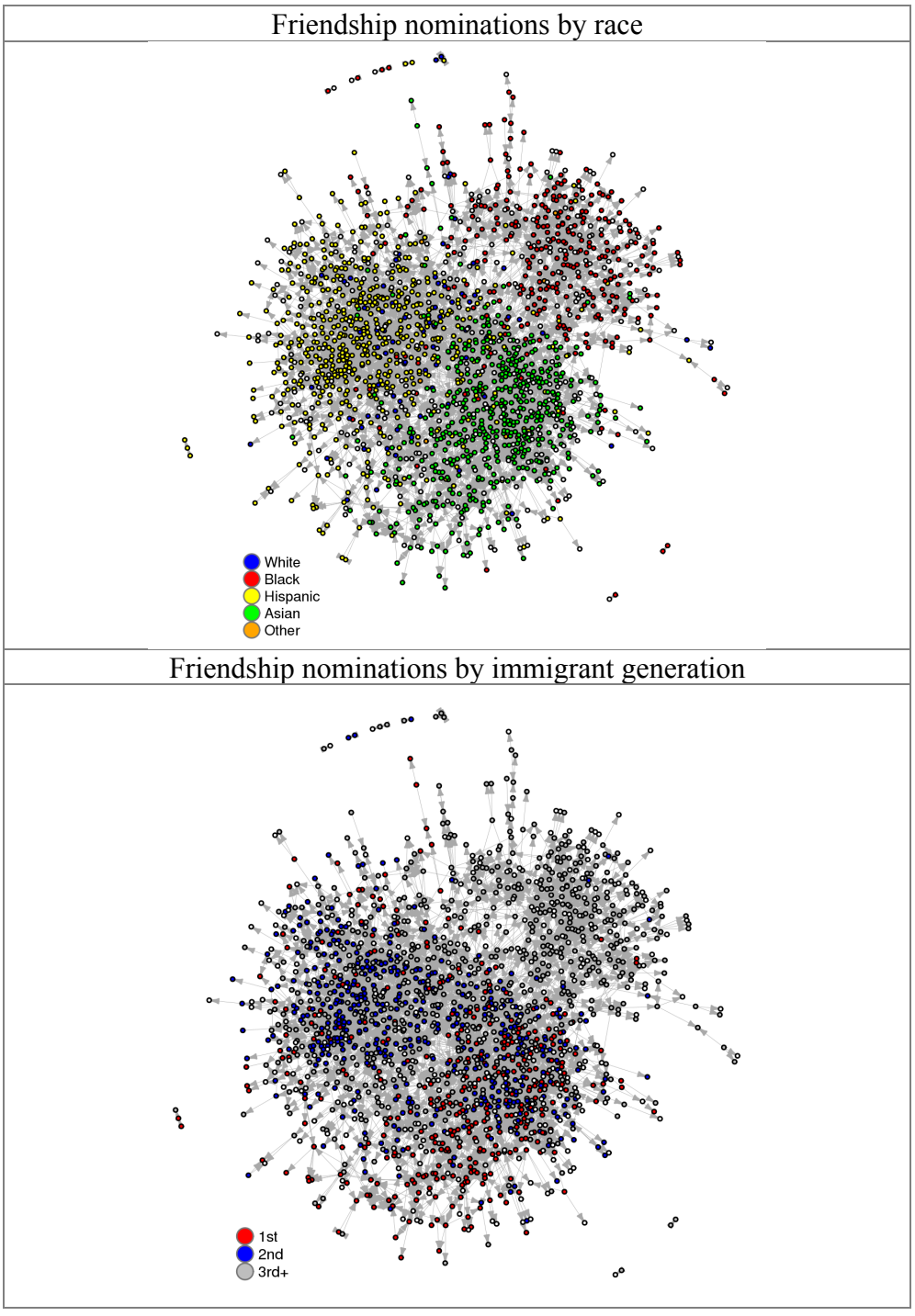

Figure 11. Wave 0 friendship nominations, race/ethnicity and immigrant generation

Wave 2, however, is a sparser and less dense graph as the 12th grade students from waves 0 and 1 have since graduated and left the network. Nevertheless, patterns of homophily

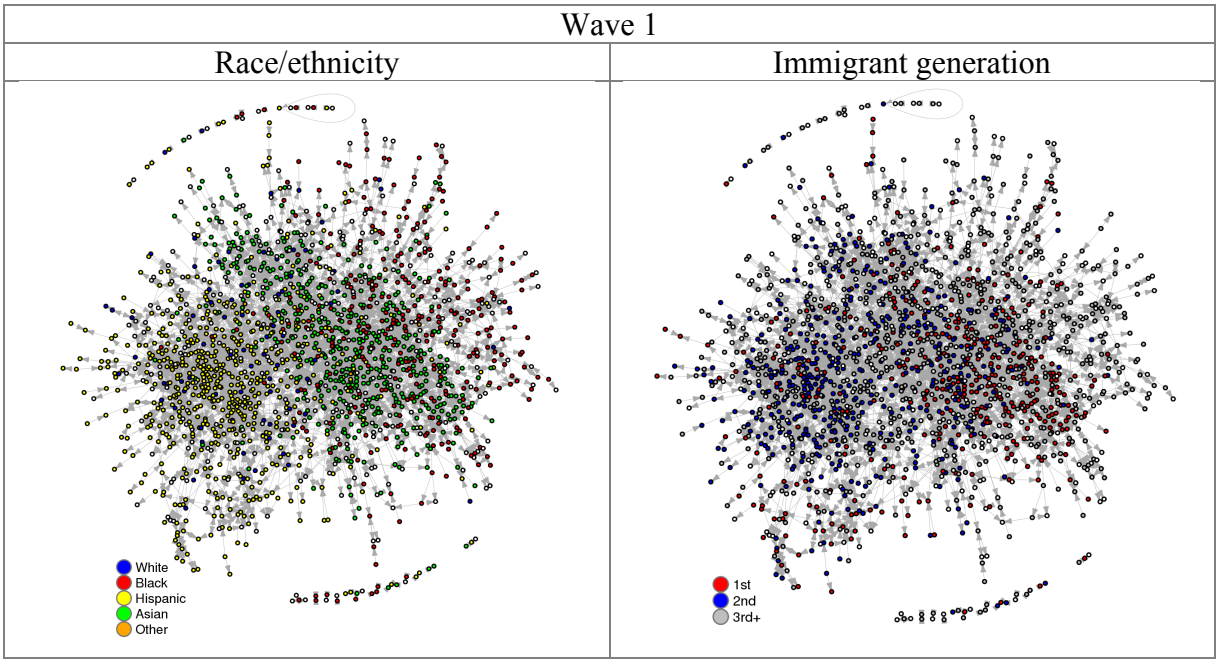

Figure 12. Wave 1 friendship nominations, race/ethnicity and immigrant generation

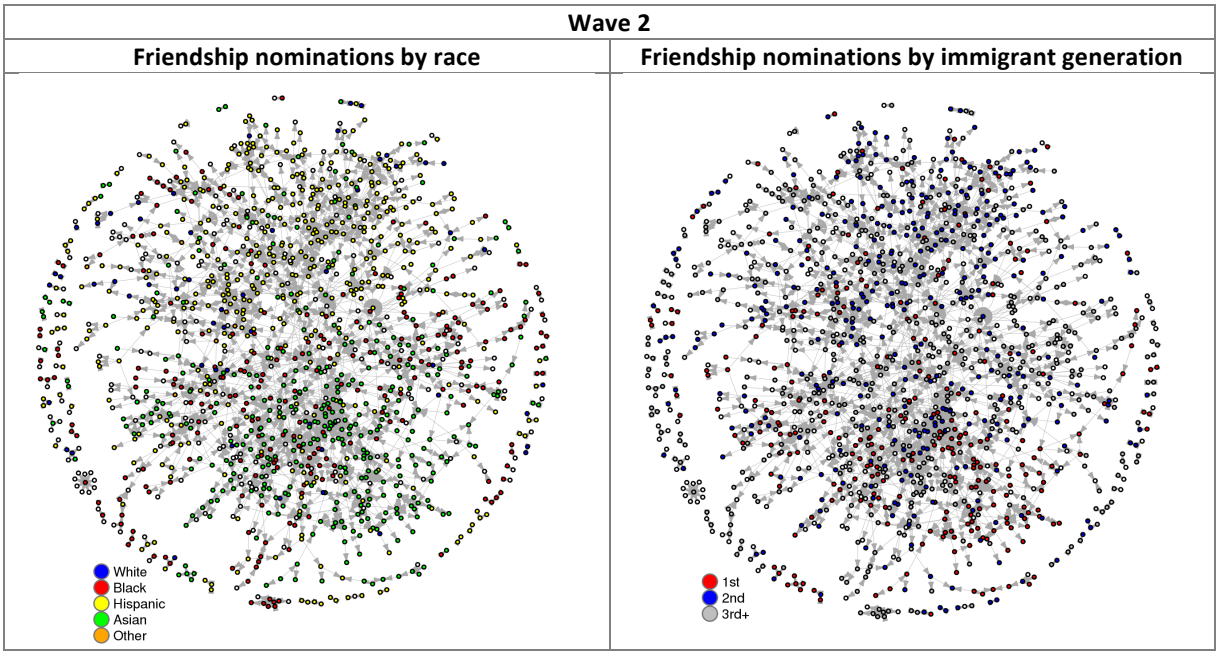

Figure 13. Wave 2 friendship nominations, race/ethnicity and immigrant generation

along racial, ethnic, and immigrant generation lines persist even in the presence of a sparse graph with fewer connections between actors.

In general, the network graphs presented here suggest that there may be relationships between race, ethnicity, and immigrant generation in friendship networks. However, one cannot rely on visual representations to make inferences about network processes that may account for how the observed graphs appears as they do – this requires more advanced statistical modeling. The following sections describe results of ERGM and SABM analyses to determine the degree to which immigrant generation and language spoken in the home contribute to friendship formation at Ellis Island Academy.

ERGM Models

Table 12 presents the result of ERGM models across waves 0, 1, and 2. The top half of the graph represents sociality parameters for each characteristic, which can be interpreted as the likelihood of forming a friendship. The bottom half represents homophily, or the propensity to form a friendship with someone with the same value of the parameter. Because the homophily terms are included, sociality can be interpreted as the likelihood of forming an out-group friendship as within-group friendships are already accounted for by the homophily terms.

Across all three models, youth were more likely to choose friends with a similar background with respect to immigrant generation and language spoken in the home, controlling for race/ethnicity, gender, grade level, and GPA. First-generation youth were between 2.5 and 3 times as likely to choose other first-generation youth as friends, while second-generation youth were between 47% and 65% more likely to choose same-generation friends. In addition, youth were between 34% and 47% more likely to choose

Table 12: ERGM models for waves 0, 1, and 2

	WAVE 0		WAVE 1		WAVE 2	
	OR	CI	OR	CI	OR	CI
Edges	<.01***	0-0	<.01***	0-0	<.01***	0-0
Sociality						
Gen: Female	1.03	0.99-1.08	1.02	0.98-1.06	1.05	0.99-1.11
Grade 11	1.2***	1.07-1.34	1.22***	1.09-1.37	0.62***	0.51-0.75
Grade 12	1	0.9-1.12	0.79***	0.71-0.88	0.77**	0.63-0.94
GPA 4Q	0.94	0.85-1.03	0.97	0.89-1.07	1.3***	1.14-1.47
GPA 3Q	1.16***	1.06-1.27	1.16***	1.06-1.26	1.34***	1.2-1.5
GPA 2Q	1.12 *	1.02-1.23	1.17***	1.07-1.28	1.44***	1.28-1.62
GPA 1Q	1.03	0.94-1.14	1.09	0.99-1.21	1.61***	1.43-1.82
Black	0.25***	0.22-0.29	0.28***	0.24-0.32	0.37***	0.3-0.46
Hispanic	0.35***	0.31-0.39	0.45***	0.4-0.52	0.46***	0.38-0.56
Asian	0.36***	0.31-0.4	0.35***	0.3-0.4	0.34***	0.28-0.42
1st gen	0.67***	0.6-0.74	0.6***	0.54-0.67	0.63***	0.54-0.74
2nd gen	0.92	0.82-1.02	0.84***	0.75-0.94	0.73***	0.62-0.85
Lang: Other	1.01	0.96-1.07	1.05	1-1.11	1.12***	1.04-1.2
Homophily						
Gen: Female	1.4***	1.32-1.49	1.58***	1.48-1.68	1.95***	1.78-2.14
Grade 10	5.73***	4.96-6.62	4.16***	3.6-4.81	0***	0-0
Grade 11	3.43***	2.94-4	2.47***	2.11-2.89	3.3***	2.63-4.13
Grade 12	5.85***	4.97-6.9	6.39***	5.41-7.55	2.2***	1.77-2.74
GPA 5Q	1.08	0.76-1.52	1.35 *	1.05-1.73	3.07***	1.74-5.4
GPA 4Q	1.6***	1.3-1.96	1.18	0.94-1.48	1.37	0.98-1.9
GPA 3Q	0.85 *	0.73-0.98	0.97	0.84-1.12	1.08	0.87-1.33
GPA 2Q	1.18 *	1-1.39	1.09	0.91-1.31	1.05	0.79-1.38
GPA 1Q	1.95***	1.66-2.29	2.48***	2.08-2.96	1.66***	1.28-2.14
White	1.29	0.9-1.84	2.02***	1.41-2.88	2.44***	1.42-4.17
Black	15.3***	12.25-19.11	15.86***	12.52-20.1	10.53***	7.75-14.3
Hispanic	6.2***	5.24-7.33	4.55***	3.82-5.42	5.59***	4.38-7.13
Asian	7.9***	6.63-9.4	11.36***	9.39-13.74	12.78***	9.75-16.76
1st gen	2.94***	2.51-3.43	3***	2.55-3.52	2.35***	1.87-2.95
2nd gen	1.47***	1.27-1.7	1.5***	1.28-1.74	1.65***	1.33-2.04
3rd gen	0.85 *	0.74-0.99	0.75***	0.64-0.87	0.73***	0.59-0.9
Lang: Other	1.34***	1.25-1.44	1.38***	1.29-1.48	1.47***	1.33-1.62

*** p <.001 ** p <.01 * p <.05

a friend who speaks a language other than English at home when they too speak another language at home, and similarly for those who primarily speak English at home (all relationships significant at $p<.001$) (see Table 11).

Examining the sociality parameters also reveals insights about cross-group friendship formation processes occurring in the school. First-generation youth were between 33% and 40% less likely to nominate friends from a different immigrant generation ($p<.001$), with a slightly lower magnitude but same direction for second-generation youth. In the first two models, language at home was not a predictor of cross-group friendship, though language at home was the only predictor except for GPA that predicted propensity for cross-group friendships in the third model. Speaking a language other than English at home increased the likelihood that youth would choose a friend who did speak English at home (see Table 11).

Control parameters for race, ethnicity, grade level, gender, and GPA were consistent with other research using Add Health data (Flashman, 2012; Goodreau et al., 2009). Despite the significant parameters for immigrant generation and language spoken in the home, race and ethnicity remain the primary drivers of friendship formation in this sample, with the greatest selectivity among Black students, followed by Asian and Hispanic students. White students were the least homophilous in their friendship patterns, perhaps due to limited opportunity for contact with other White students given the minority status of this group in this school context. Academic achievement appeared to operate differently for each GPA quintile: high achieving students tended to select other high-achieving students as friends, while those in the middle GPA quartiles were more likely to choose friends outside their friendship groups. These relationships held

even when including a parameter that controls for local position – a variable representing the degree to which students share similar classes and thus controlling for opportunity for contact in classroom settings. Though the results of the modes including this parameter were not used in the final model as missing data led to a reduced sample size, this may indicate that academic achievement plays a differential role in friendship formation in this sample above the effects of local position and tracking in school classes.

SABM Models

Following the ERG models in the previous section, SABM models were developed using the **RSiena** package in R (Ripley et al., 2016) to examine the exogenous and endogenous network factors that account for the changes in friendship nominations across three waves of network data. Each of the three waves was reduced to 967 complete cases across the three waves occurring over a two-year period. These models require changes in ties to occur between observed time points, but not too many changes. Jaccard indices measured from 0 (infinite change) and 1 (no change at all) are used to determine the degree of change between panels in longitudinal network data. Values between .3 and .6 are preferred, and below .2 may suggest that the changes in the network ties are too dramatic to be accurately captured by the modeling process (Snijders et al., 2010). Jaccard indices for changes in tie formation between waves 0 and 1 and waves 1 and 2 were .20 and .23 respectively, which while on the low end fit within the required parameters for model estimation. While friendship ties were stable enough to allow for model estimation, these indices provide evidence to the variable nature of adolescent friendships across multiple years of data collection.

Results for the SABM are presented in Table 13. The first model includes parameters in the objective function for endogenous network factors, including out degree, reciprocity, transitive triplets, and 3-cycles, as well as exogenous factors, including same gender, grade, race/ethnicity, immigrant generation, and language spoken. Theoretically, the out-degree parameter represents the likelihood of adding a tie from one network to the next, and the negative parameter suggests that friendship is somewhat

Table 13: SABM model parameter estimates of friendship network change

	Model 1			Model 2		
	Est	SE	t-dist	Est	SE	t-dist
Objective function						
Out degree (density)	-4.95	.05	-90.52***	-5.02	.06	-81.59***
Reciprocity	2.61	.06	45.64***	2.58	.05	48.14***
Transitive triplets	.99	.04	27.73***	1.27	.09	13.69***
3-cycles	-.87	.08	-10.3***	-.82	.08	-10.26***
Outdegree – Popularity	-.13	.02	-7.89***	-.12	.02	-7.71***
Same gender	.27	.03	9.43***	.28	.03	9.75***
Same grade	.67	.03	21.12***	.67	.03	20.43***
Same race/ethnicity	1.13	.04	30.28***	1.22	.04	30.69***
- Same race/ethnicity X transitive triplets				-.33	.10	-3.33***
Same immigrant generation	.2	.03	6.86***	.21	.03	7.24***
- Same imm. gen. X transitive triplets				-.02	.06	-0.25
Same language spoken	.24	.03	7.49***	.22	.03	6.83***
Rate function						
Rate 1	15.65	.82		15.70	.89	
Rate 2	6.80	.27		6.78	.28	
All convergence t-ratios:	< .16			< .16		

*** $p < .001$ ** $p < .01$ * $p < .05$

"costly" – that is, students are more likely not to have a tie than to have a tie. Because this is partially due to study design (Add Health data allow for the nomination of up to five male and female friends), this parameter is generally interpreted much like the intercept in traditional regression models and is of less theoretical interest. Estimates for

reciprocity and transitive triplets parameters suggest that students in the network tended to reciprocate friendship nominations and form triangles in relationships or otherwise participate in transitive closure (*i* -> *k* -> *j* <- *i*). The reciprocal of transitive closure – t3-cycles – is negative, suggesting that these are likely not to account for tie formation in these networks and further supports the evidence for triadic closure.

All parameters for same gender, grade, race/ethnicity, immigrant generation, and language spoken were positive and significant, which provides support for the findings of the ERG models and suggests that these structural forces may account for the change in tie formation across the three waves. While grade and race/ethnicity emerged as primary drivers of friendship change, so too were immigrant generation and language spoken predictive of changes in friendship ties in similar proportions to the ERG models. The second model tested the interaction effect of both race/ethnicity and immigrant generation on transitive triplets. This interaction test whether or not transitive closure is more likely to occur when actors *i* and *j* both share the same value of the characteristic. The interaction was significant and negative for race/ethnicity ($p<.001$), indicating that these ties are likely *not* to be formed in the network. In other words, triadic closure did not seem to operate alongside homophily to promote same-race friendships; rather, same-race friendships are largely due to individual selection mechanisms. The parameter for immigrant generation not statistically significant from zero, indicating that transitive closure does not occur differentially immigrant generation. For both models, the convergence t-ratio was less than .16**,** indicating strong model convergence (less than .20 considered excellent convergence, see the Rsiena Manual (Ripley et al., 2016)).

Discussion

The goal of this study was to examine the degree to which immigrant generation and language spoken in the home play a role in friendship formation in the context of a multicultural school setting, above and beyond factors like race, ethnicity, gender, grade level, and academic achievement. While previous research has examined the role of immigrant generation through a cross-sectional study in a much larger sample of schools with immigrant populations (see Chapter 3), this study took advantage of the unique study design of the Add Health saturated sample to both examine these associations in a longitudinal context and add the additional variable of language spoken in the home.

The primary finding of this study is that both immigrant generation and language spoken in the home play important roles in friendship formation. Results from ERGM analyses indicated that first-generation youth are between 2.5 and 3 times as likely to choose a friend of the same generation, while second-generation are between 47% and 65% more likely to do the same. In addition, youth were between 34 and 47% more likely to make friends with another who spoke the same language at home, above and beyond race, ethnicity, and immigrant generation. Given the finding that youth also tended to choose friends from the same racial and ethnic background, it is clear that many immigrant youth in this sample tended to form homogenous relationships along a variety of cultural lines. While the focus on immigrant generation and language provides a new finding to the literature in this area, the overall findings are consistent with research that has examined the roles of race, ethnicity, and immigration in friendship formation (Aboud et al., 2003; Houtte & Stevens, 2009; Kao & Vaquera, 2006; Moody, 2001b) and presents a new variable for study with respect to language spoken in the home.

In addition, results from the SABM model indicated that these relationships held even after accounting for endogenous network factors such as reciprocity and transitivity that are often cited as important in friendship formation processes (Goodreau et al., 2009; Lusher et al., 2013; Snijders et al., 2010). Nevertheless, the magnitude of reciprocity and transitive closure parameters suggests that these network factors may play a more prominent role in friendship formation than same-group friendship nomination based on immigrant generation and language spoken for this sample. This pattern provides some promise for intervention efforts aimed at fostering more cross-cultural interactions among students in school settings. Interventions might invite students to engage in cross-cultural interactions through already well-established social structures – like being a friend of a friend, or reciprocating the offer of friendship – so as to increase the likelihood of such ties may be maintained over time. Students choose friendships for reasons above and beyond sameness, and these reasons may inform interventions to foster cross-cultural friendships.

The negative interaction effect between race/ethnicity and transitivity coupled with the lack of an interaction effect between immigrant generation and transitive closure indicates an important finding: youth were no more likely to form a friendship tie if that mutual friendship was formed with someone of a similar cultural background. Transitive closure did not occur as a result of same immigrant-generation friendships, and in fact was less likely to occur among same-race/ethnicity friendships. In this sample, it is reasonable to conclude that the tendency to form same-culture friendships was not a result of triadic closure, but rather individual same-group preferences (or perhaps another untested network process). However, the lack of a substantial sample of White students

in this sample may limit the ability to make this claim. Previous research has also shown that the tendency to form same-group friendship tends to vary across school contexts (Goodreau, Kitts, & Morris, 2009; see Chapter 3). Whether or not the tendency to form same-culture friendships is accelerated or reduced by network factors in a particular school setting may have more to do with both the racial attitudes of the majority group and the social context of a particular school setting than the actual processes of friendship formation that give rise to these cultural divisions in friendship.

Though the case-study nature of this study limits the generalizability of this study to schools across the United States, the deliberate decision to choose a school with a diverse, multicultural and multilingual student body was intentional as it represents the type of school that more schools in the United States are becoming (Scanlan & López, 2014). Further limitations to the study include the missing data on both attribute and network characteristics; however, it should be noted that the data from this school in the Add Health dataset offer a very unique opportunity to examine factors underrepresented in the literature of friendship networks in adolescence. Future research could examine additional methods of handling missing network data, and in turn collect data in more multicultural settings that offer a more contemporary glimpse (Add Health data are a generation old at the time of this writing) at the processes of friendship formation in multicultural settings than the data presented in this study.

Conclusions

What is clear from this case study is that immigrant generation and language use are key predictors in friendship formation in a multicultural school setting. In light of the mounting evidence of the increasing cultural and linguistic diversity of schools (Capps et

al., 2005; Passel, 2011; Scanlan & López, 2014), it is imperative among school communities to consider the complex ways in which immigrant generation and spoken language contribute to the complex social environments that promote or detract from the social integration of their students and their families.

The literature on social integration in school settings focuses on race and ethnicity at the expense of other relevant cultural considerations. While it is not the intention of this paper to critique such approaches, there needs to be a recognition that the cultural landscape of US schools is currently and is becoming very different than the cultural landscape that informed the debates of school (de)segregation in the wake of the Civil Rights Movement and Brown vs. the Board of Education decisions. One area where this can be improved is in the standards of educational reporting at district, state, and national levels. Studies of integration benefit from school reports on the racial and ethnic makeup of theirs school communities, and studies that focus specially on race and ethnicity (e.g. Orfield & Frankenburg, 2014; Orfield, 1983) are able to benefit from these data. However, most large-scale educational surveys fail to account for factors such as immigrant generation and language use. There are currently no comprehensive, nationally representative datasets that would allow for one to examine the proportion of school communities that are comprised of immigrant youth and their families. That nearly one in three Americans will be foreign-born or the child of a foreign-born parent by 2050 (Passel, 2011) suggests that the need to collect these data is already here.

It is hoped that while the focus in this study is on processes of friendship formation, that the results can be informative for those who intend to develop interventions that promote intergroup interactions and reduce intolerance and prejudice.

A review of recent literature in this area suggests that while the literature on this topic is vast, the quantity of internally valid research on the efficacy of interventions to actually reduce prejudice remains rather low (Paluck, 2011). The approaches taken in network science offer concrete suggests for improvement on this front. For example, studies of prejudice and intolerance might consider network analysis approaches to model processes of tie formation (friendship or otherwise) and same- and cross-group interaction in addition to standard psychosocial measures of intolerance and prejudice. While such approaches allow for the practical advantages of being able to see with whom individual actually interact – and thus potentially avoiding some of the issues in self-reporting bias – but it shifts the paradigm of what social intolerance is as a psychosocial phenomena held by individuals to an understanding of norms, behaviors, and attitudes as depended upon the social network and structures in which individuals are embedded. Paluck, Shepherd, and Aronow (2016) provide a noteworthy example of such an area of research. In a randomized trial of a conflict reduction intervention in 56 schools, the intervention successfully reduced conflict as measured by a 30% reduction in the number of disciplinary reports of peer conflict. What is unique about the intervention is that involved "seeding" school communities with individuals who received the intervention and were encouraged to take a public stance against conflict in their school communities. The authors demonstrated not only that those individuals influenced the norms and behaviors of their peers – but those who were highly connected and socially well-positioned had the greatest influence on their peers. While the study focuses on conflict and not necessarily intolerance or prejudice per-se, it highlights how network-informed

interventions can bring about change in school settings (for a review of network-based intervention approaches, see Valente, 2012).

The example offered by Paluck et al. (2016) highlights the capacity of a small community of youth to bring about positive social change in their school community. What would such an intervention look like, when aimed to foster the integration of immigrant youth? The results of this study suggest that such an intervention must consider individual characteristics like immigrant generation and spoken language spoken as well as network-based factors that may promote or detract from integration. The next step in the research will need to examine whether such an intervention would result in active changes both in attitudes and norms as well as the actual cross-group social bonds and friendship ties indicative of a well-integrated school community.

Chapter V: Toward a theory of immigrant integration in schools

The three papers in this dissertation have examined the processes of integration and friendship formation of youth from immigrant families in US school communities. This final chapter concludes this dissertation with a summary of the empirical findings across each of these three papers, the limitations of each, and areas for future research.

Paper #1: The integration of immigrant youth in schools and friendship networks

The primary goal of the first paper was to conduct a descriptive, cross-sectional analysis that examined the social position of youth from immigrant families relative to their third-generation and native peers. This focus on social positions centered on questions such as whether or not immigrant youth were more or less likely to report having a best friend, were more central or peripheral in school friendship networks, or were more or less likely to report feeling connected to their school community. To answer this question, a series of multilevel models predicting integration at dyadic, network, and school levels were used to predict the degree of inclusion or marginalization that youth from immigrant families experienced, paying particular attention to differences across race, ethnicity, and generation. The advantage of the cross-sectional design of this study was its breadth – particularly, the inclusion of network measures from 63 schools with a significant immigrant population from the Add Health data set. This enabled the study to examine the inclusion and/or marginalization experiences of immigrant youth beyond the case examples and other research studies that have examined this question previously (Aboud & Sankar, 2007; Chan & Birman, 2009; M. Lee et al., 2014).

Across the 63 schools, first-generation youth were somewhat marginalized in friendship networks, but tended to be more integrated through school structures (e.g.

extracurricular activities) than their second-generation and native peers – consistent with other areas of research (Cherng et al., 2014; Leszczensky & Pink, 2015; Smith et al., 2014; Vermeij et al., 2009). What was perhaps the most novel finding of this study was the success of second-generation youth in navigating the social context of multicultural school settings. Second-generation youth were more likely to be popular, central, and have a best friend in friendship networks than both their first- and third-generation peers. It is possible that second-generation youth, who have the social and cultural capital, as well as the language ability, to engage others across cultures are placed in a unique position of advantage. Second-generation youth may function as "bridgers" (Putnam, 2000) between 1st and 3rd generation youth and occupy positions of social advantage. This finding is also consistent with other literature that has noted a second-generation advantage with other outcomes, such as academic achievement and school engagement (Crosnoe, 2012; Hao & Woo, 2012).

The social context in which friendships were formed and individual youth were located was also associated with integration. Students enmeshed within friendship groups of the same race/ethnicity or immigrant generation were actually more integrated across a number of different measures, suggesting (perhaps paradoxically) that social bonding (Putnam, 2000) with other same-group peers might actually promote integration more broadly. However, the significant interaction effect between immigrant generation and some measures of integration may also indicate that bonding capital – while supportive of positive self-worth and cultural identity – may also place youth from immigrant families at risk for experiencing marginalization and being less connected to friendship networks and the school community. These paradoxical findings may indicate

that youth are caught between receiving the social support that comes with bonding with other in-group peers while also risking being situated within a largely homogenous peer group that may isolate them from integration with the school community more broadly. Other factors, including the cultural composition of the school, also played an important role in explaining individual differences in integration across the 63 schools.

There are two key limitations taken in this approach. First, the cross-sectional nature of this study design was unable to examine the processes of friendship formation and integration over time. A stronger design would look at the how youth make friendship choices and integrated into school communities over time to see whether immigrant youth are becoming more or less integrated and are more or less likely to form friendships. A second limitation is that the multilevel models used in the first paper assume independence among the individuals in the study. Because the very nature of the study assumes that individual behaviors and actions are *dependent* upon the social networks and social environment around them, this assumption may be violated. A stronger study would use a methodological framework that enables the dependencies in network data to be directly assumed and modeled.

The second and third papers of this dissertation attempt to address each of these key limitations. In the second paper, the issue of statistical dependence is addressed through the use of exponential random graph modeling (ERGM), which is an approach used in social network analysis to model friendship formation while accounting for dependencies in network data. In the third paper, this approach is extended through the use of stochastic actor-based modeling (SABM) which models longitudinal changes in time formation. The second paper takes advantage of Add Health's large cross-sectional

dataset of schools, but is unable to examine change over time. The third paper examines change over time, but is restricted to a sample of just one school from the dataset.

Paper #2: Immigrant generation and friendship formation

The primary question addressed in the second paper was the degree to which immigrant generation plays a role in the friendship formation of youth in US schools. The ERGM approach taken in the paper was used to model the social processes of sociality (i.e. the propensity to make friends) and homophily (i.e. same-group friendships). While previous research had already examined the role that race and ethnicity play in friendship formation (Currarini et al., 2009; Goodreau et al., 2009; Moody, 2001b), this study contributed to the research by using a relatively new statistical methodology (ERGM) to examine the role of immigrant generation in youth friendship networks.

Results from the study confirmed that immigrant generation plays an important role in friendship formation, building upon the findings from the first study focusing on dyadic, network, and school-level measures of integration. First-generation youth were as much as six times as likely to nominate another first-generation youth as their friend, while second-generation youth were twice as likely to nominate another second-generation youth as their friend, above and beyond other common predictors of friendship formation including race, ethnicity, gender, and grade level. The high magnitude of the parameter for first-generation youth also suggests that the role of immigrant generation may be comparable to that of race and ethnicity as well as gender in youth friendships.

An additional finding from the study is that first- and second-generation immigrant youth were no less social than their third-generation and native peers. This finding provides additional empirical support to the claim made in Paper #1 that the story of immigrant integration is largely one of success: the bi-directional process of integration is occurring, resulting in fewer differences between immigrant and native communities. This positive perspective on the success of immigrant communities is consistent with a wide body of research highlighting the success of immigrant communities in navigating the challenges of integration (Alba, Kasinitz, & Waters, 2011; Alba & Nee, 2009; Waters & Gerstein Pineau, 2015).

This study also examined how the role of immigrant generation in friendship formation may have differed across school contexts. Two opposing theoretical frameworks guided this research question: contact theory and competition theory (Savelkoul et al., 2011; Vervoort et al., 2011). Contact theory suggests that greater opportunities for intergroup contact would be associated with more positive out-group attitudes, which in turn would result in more cross-group friendships. Conversely, competition theory suggest that as the proportion of minority group members of a population increases, the majority group will feel threatened and will be less likely to be amenable to cross-group relationships. As seen in Figure 1, the results from paper 2 provided more support for contact than competition theories in relation to immigrant generation in Add Health schools. As the proportion of youth from immigrant families as well as the proportion of youth of color in a school increased, the tendency toward forming same-group friendships decreased. In other words, youth in diverse schools were more likely to form cross-group friendships. These linear relationships are

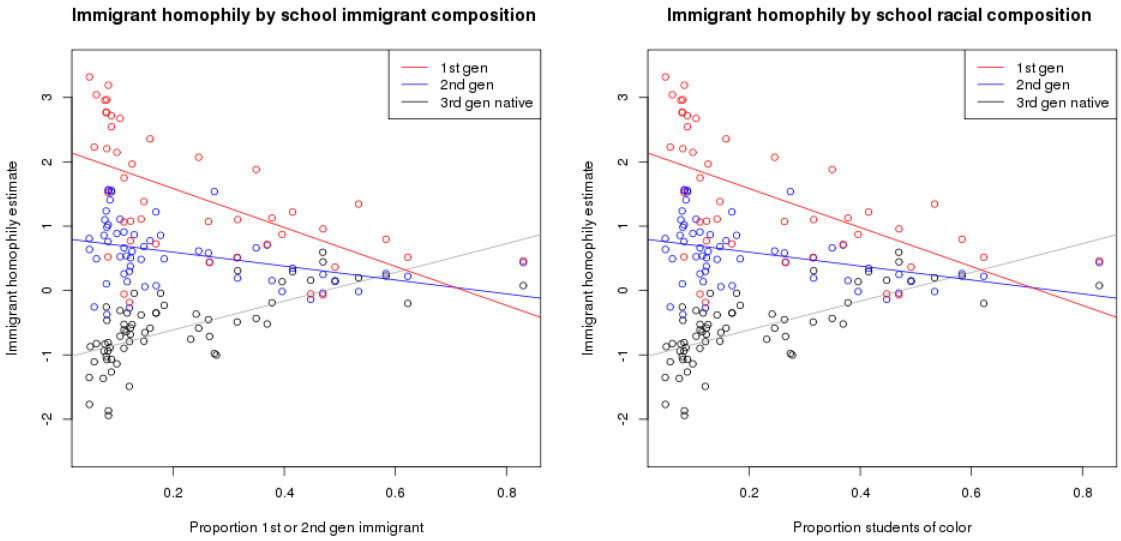

Figure 14. Homophily by school composition

somewhat distinct from similar analyses conducted by Moody (2001b), who found a curvilinear relationship between same-race friendship tendencies and school context using Add Health data. While these differences may be the result of different sampling frames, it also may be the case that same-race and same-generation friendships operate differently across school contexts.

In addition to findings on immigrant youth, the results from this study are consistent with findings in existing literature that have focused specifically on race and ethnicity as predictors of friendship formation (Currarini et al., 2010; Goodreau et al., 2009; Moody, 2001b). The findings of this study may be slightly different as the sample of schools included were based on a different set of criteria that emphasized the inclusion of schools with immigrant populations. Nevertheless, race emerged as a particularly salient predictor of friendship formation, and the strength and nature of the relationship between race and friendship varied depending on school context.

The primary advantage of the approach taken in this paper was the large sample size afforded by Add Health data, which allowed both for greater generalization of the research questions regarding immigrant generation and friendship formation and for an empirical examination of contact and competition theories of social interaction. However, this paper shares a limitation with the first in that is relies solely on cross-sectional data and is unable to examine the developmental pathways that give rise to friendship formation in networks over time. The third paper takes advantage of a unique portion of the Add Health study design, which examined the friendship networks of one culturally and linguistically diverse school over time.

Paper #3: Immigrant generation and friendship formation

The primary goal of the third paper was to extend the research of the previous two papers and examine friendship formation in school contexts over time. Because these data relied also on the in-home questions from the Add Health study design, the approach taken in the study was also able to examine another important factor related to the friendship experiences of youth from immigrant families: language spoken in the home. The approach taken in this study was to develop first three cross-sectional ERGM models to examine the endogenous and exogenous factors that may have given rise to the network as observed in the data. Next, an SABM model was used to examine the network factors that could have accounted for the friendship changes made across the three waves of data.

Building upon the research from the previous two papers, the primary contribution of the third paper was the recognition of the roles of both immigrant generation and language spoken in the home in the formation of youth friendships. First-

generation youth were between 2.5 and 3 times as likely to choose a friend of the same generation, while second-generation youth were between 47% and 65% more likely to do the same. Similarly, youth were between 34% and 47% more likely to choose a friend who spoke a similar language in the home, controlling for race, ethnicity, immigrant generation, and other exogenous attributes. These relationships held even after accounting for network processes such as reciprocity and triadic closure, which have been demonstrated to be predictive of friendship formation in samples of youth (Goodreau et al., 2009; Lusher et al., 2013; Snijders et al., 2010). Nevertheless, it should be noted that the magnitude of the parameters for reciprocity, transitivity, same grade level, and same race/ethnicity suggest that these factors may be primary to friendship formation and that immigrant generation may play a more secondary role. This finding in particular breaks somewhat from the finding of the second paper that immigrant generation and race/ethnicity may in fact be on par for first-generation youth. Further research could further examine these questions to determine the degree of magnitude each of these predictors have in the friendship formation of youth.

An additional question addressed by this study was to examine whether or not the tendency toward triadic closure occurred differentially across race, ethnicity, and immigrant generation. This question was tested by examining the interaction effect between these two network predictors and immigrant generation. Findings indicated that triadic closure did not occur as a result of same immigrant-generation friendships, and in fact was *less* likely to occur among same-race/ethnicity friendships. In other words, homophily – or perhaps some other unmeasured network process – and not transitive closure, were the driving forces behind same-group friendship formation in this sample.

The most significant limitation of this study was its limited sample size of one culturally and linguistically diverse school setting. However, what was lost in breadth was gained in depth, as this was the first study to use ERGM and SABM approaches to examine immigrant generation as a predictor of youth friendships over time with a US-based sample.

Additional Limitations

Many readers of this dissertation will note that the data used for the analyses in all three of these papers come from the Add Health dataset, which was collected from a nationally representative sample of schools in the 1994-1995 school year. These data are a full generation old at the time of the writing of this dissertation, thus leading some to question whether or not the findings are generalizable to the current population of youth in the United States. It is argued here that the focus of this dissertation is less centered on the description of the current state of immigrant youth friendships and rather on the friendship choices of youth, the structural processes of integration, and how different social and cultural conditions lead to different patterns of friendship choice. The primary contributions of these three papers are not that immigrant integration necessarily occurs in the same way today as it did twenty years ago (though there may be many reasons to believe this is the case), but rather that the integration of immigrant youth 1) can occur, 2) can be observed through social structures, 3) occurs differently according to situational contexts but still suggests broader national trends.

Nevertheless, much has changed in the twenty years since the inception of the Add Health Study. Three social, political, and cultural trends are outlined as factors that should be considered when interpreting the results of these research studies. First, the

social landscape of friendship – particularly for youth – has changed dramatically with the advent of social media and digital communications. With each year, more and more youth are participating in various forms of social media (Lenhart, Purcell, Smith, & Zickuhr, 2010), bringing both the potential for new forms of relationships as well as risk. A summary of research in *Pediatrics* suggests that social media – while having the potential to offer some positive protective factors – places youth at risk for cyberbullying, sexting and other risky behaviors, and even "Facebook Depression" (O'Keeffe & Clarke-Pearson, 2011). Not only might youth form and maintain friendships differently as a result of this dramatic social change, but youth may also redefine what it means to be a "friend" and in turn nominate very different friendship networks than their peers from a generation prior. With respect to cross-group friendship, it remains unclear whether internet activity and social media usage exposes youth to greater cultural difference and in turn fosters cross-group interactions, or whether the same social processes that lead to homogenous networks in person are reproduced in online environments. Second, the political context of globalization and migration have changed the terms and consequences under which migration occurs across the globe. In 1995, NAFTA and its subsequent consequences on US immigration were in their infancy (Fernandez-Kelly & Massey, 2007; Fernandez-Kelly, 2007), and it would still be six years before the terrorists attacks on September 11, 2001, would intertwine in a new way the political discourses of immigration policy and national security (Mittelstadt, Speaker, Meissner, & Chishti, 2011). It may be the case that current school communities are challenged by political discourses that discourage policies and programs that promote the integration of student and family communities of multicultural backgrounds. This then introduces a third

consideration: that the United States is both more racially and ethnically diverse and is composed of a greater proportion of immigrants than the generation prior (Passel, 2011). Schools encountering a "New Mainstream" of culturally and linguistically diverse students (Enright, 2011; Scanlan & López, 2014) may in turn be more responsive to the needs of this population as the particular needs for integration increases. Given the enormity of change that has occurred in the previous two decades both in these three areas and in others, there is a great need for further research to shed light on how communities, teachers, families, and students are negotiating these questions in the current social, political, and cultural context.

Future Research

In light of the results of these studies, four areas of future research are highlighted. First, future research should examine the degree to which immigrant youth are integrated in school and youth settings in the current context and climate of US schools. Cross-sectional surveys of educational data need to collect information on the proportion of students from immigrant families and students who speak languages other than English in school populations. Longitudinal studies that examine the trajectories that schools and districts are taking with respect to integration would be particularly helpful in identifying how schools are responding to demographic changes in the youth population and will help predict the direction schools are headed. Second, research should continue to identify proximal processes – i.e the regular and sustained reciprocal interactions between individuals and their environments over time (Bronfenbrenner & Morris, 2006) – that affect integration. Studies in this area might examine, for example, how sustained relationships with a same-race/ethnicity peer group may foster positive in-

group identity, and in turn lead to better cross-group interactions, or how student-teacher interactions can promote greater school connection for youth from immigrant communities. Third, future research should continue to examine school-level and district-level factors that promote greater integration and cross-group relationship formation. The particular advantage of research at these levels is that such research is likely to be more directly applicable to policy interventions enacted at these levels. Finally, reliable and internally valid interventions that facilitate cross-group interaction and reduce intolerance and prejudice are needed to promote integration in school communities (Paluck & Green, 2009). Such approaches should also explicitly examine network-based processes of friendship formation and social influence (Paluck et al., 2016; Paluck, 2011; Valente, 2012) may contribute to or detract from these efforts.

Building a theory of immigrant integration in schools

The structural approach to immigrant integration in school settings taken in these studies implies an understanding of social structure as occurring at multiple levels, and that accompanying theoretical frameworks can be used to explain processes of integration at each level. These levels can be helpful when framing questions that address questions of immigrant integration in school settings. Table 14 presents six areas of investigation for the future study of immigrant integration in school settings, with accompanying structural forces, theoretical frameworks, and mechanisms of change.

Each area of integration is associated with structural forces that can promote or detract from integration, theoretical frameworks to guide thinking in how these structural forces operate, and mechanism of change that suggest opportunities for intervention. At the individual level, cultural identities (Berry, Phinney, Sam, & Vedder, 2006; Ogbu,

2004), rational choice (Leszczensky & Pink, 2015), and social-cognitive factors such as efficacy and motivation (Briones & Tabernero, 2012) may promote or detract from school integration and school connection. Theoretical frameworks that focus on areas of cultural and collective identity (Ogbu, 2004) and social-cognitive approaches to behavior (Bandura, 1976, 2006) might inform school-based interventions like individualized education plans or other clinical interventions that help youth navigate the challenges of their social environments and lead to greater integration within friendship networks and school communities. Dyadic and network levels focus on the relationships that youth

Table 14: Integration in school settings: Structural forces, theoretical frameworks, and mechanisms of change

Areas of integration	Structural forces of integration	Theoretical frameworks	Mechanisms of change
Individual	Cultural identities, rational choice, self-efficacy, motivation	Collective identity, social-cognitive, agency,	Clinical interventions, individualized education plans (IEP)
Dyadic	Homophily, interpersonal skills, Social influence and selection	Attachment, Social support	Peer-led interventions, Social support groups
Network	Transitivity, social position, cliques and friend groups	Social capital, Social closure, Strong/weak ties	School-based programs and interventions, youth-led interventions
School	Tracking, Extracurricular activities, School climate, Parent engagement	Contact and competition	School culture, parent involvement, administration
Macro	Residential segregation, social-political context	Collective identity, Spatial variation & new destinations	Social policy, collective action
Developmental	Developmental trajectories	Mainstream assimilation, segmented assimilation, life course theories	(All of the above)

form with others, specifically examining how youth are integrated into communities through social processes like homophily, transitive closure, and social position. Theories of social capital (Coleman, 1988; Putnam, 2000), weak-ties (Granovetter, 1973),

attachment (Bowlby, 1982) and social support might inform peer-led and school-based interventions can promoted integration in school communities. A wide body of research on anti-prejudice and tolerance interventions have taken this route with some measures of success (Paluck & Green, 2009; Paluck, 2011). At the school level, tracking, classroom organization, and administrative decisions may place youth in positions of marginalization or advantage in schools (Lucas & Berends, 2002, 2007). Theories of contact (Allport, 1954; Pettigrew, 1998) and competition (Bobo & Hutchings, 1996; Savelkoul et al., 2011) suggest that individuals may behave differently depending on the school context, particularly the proportion of other youth in a school community who share their cultural heritage. Interventions that focus on changes in school culture and that involve parents from immigrant communities (Epstein, 1991; Garcia Coll et al., 2002; Hoover-Dempsey et al., 2005) provide opportunities for intervention at this structural level. Moreover, research documenting different intervention strategies for tracking, advanced standing / advanced placement classes, and other factors that impact the structure of classrooms and immigrant integration in schools would provide needed guidance about how taken-for-granted school structures may serve to integrate or marginalize youth from underserved backgrounds. Macro-level structures focus on the social-political dimensions of integration, and center on the challenges of residential segregation and the social-political context of migration in the United States (Logan, Stowell, & Oakley, 2002; Orfield & Frankenburg, 2014; Richards, 2014; Stroub & Richards, 2013; Williams & Collins, 2001). Research in this area focuses on factors such as spatial variation (Betancur, 1996; Susan K Brown, 2006) – for example, one study in this area suggests that up to a third of friendship segregation within-schools is

due to the residential segregation that determined the racial and ethnic composition of the student population (Mouw & Entwisle, 2006). Interventions at this level focus on raising public awareness, macro-level policy initiatives, and community action (Kozol, 2005; Orfield & Frankenburg, 2014; Warren & Mapp, 2011). Finally, across each of these areas of structural integration, a developmental focus that examines each of these structures as dynamic, changing over time, and in constant bi-direction interaction with other structural areas links each of these structures together. Theories of mainstream and segmented assimilation – and the debates that arise in this area –take such a perspective and follow generations of immigrant youth over time to examine life course outcomes related to integration (Haller, Portes, & Lynch, 2011a; Portes & Zhou, 1993; Waters & Gerstein Pineau, 2015; Waters & Jiménez, 2005).

The primary focus from the papers presented here were on dyadic, network, and school level areas of integration. The second paper focused specifically on theories of contact and competition, while the third paper examined network-based theories of social closure and (to some extent) developmental questions through the longitudinal analysis of network change. The first paper introduced these questions by providing an overview of integration occurring (or not) across all these different levels. While the papers do not focus on individual, macro, or developmental trajectories specifically, the purpose of placing these items together is to guide future approaches to studying structural integration in school settings and identifying theories that may explain integration across each of the levels.

The structural forces, theoretical lenses, and mechanisms of change outlined in Table 14 point toward a broader theory of immigrant integration in school settings.

While each of the structures differs in context, in how research has linked theory to integration at that level, and in turn have unique mechanisms of change, there are common theoretical assumptions about how integration works across these levels, which are outlined here in three propositions. First, integration can be conceived as a bidirectional process occurring at individual, dyadic, network, school, and macro levels, and that such processes each take place within a developmental framework that situates integration within a period of time. While similar to other ecologically based theoretical models (Bronfenbrenner & Morris, 2006), what this model brings to the theoretical understanding of immigrant integration is a focus on the dyadic and network levels of integration and how networks bridge micro- and macro-level processes. Second, integration occurs both *within* and *across social* structures. Processes of integration that occur in one area will be associated with accompanying changes in others. One of the challenges of existing literature is that integration is examined only at one level and the bi-directional process of integration change is often overlooked. However, studies that examine these questions – for example Mouw and Entwistle's (2006) research linking residential segregation to within-school integration or research examining how the grade level or cluster-level social structures in which networks are embedded impact network relationships (Leszczensky & Pink, 2015; Valente et al., 2013). This approach differs from public health models (Berkman, Glass, Brissette, & Seeman, 2000) which may focus too much on social networks as a link between social determinants and individual psychosocial and health-related outcomes, and may miss the role of individual choice and agency (Bandura, 2006; Snijders et al., 2010; Udehn, 2002). This leads to a third proposition: that immigrant youth play an important role in the construction of social

structures, often through the networks they form with others (Bandura, 2006; Snijders et al., 2010; Udehn, 2002). Immigrant and native youth have are viewed as having the capacity to make choices on individual and dyadic levels that in turn have consequences on the larger social structures in which they are embedded – recognizing that they too are constrained by existing network and other social structures and randomness (Snijders et al., 2010). Thus youth are dependent upon the structures in which they are embedded; an in-turn create those very structures. A critical implication of this assumption is that the capacity to change such social structures lies not only with broad changes at macro and policy levels, but that the very source to the challenges that youth face lies within the grasp of youth themselves.

Conclusion

In conclusion, the work of this dissertation can also be understood as a contribution to American Academy of Social Welfare and Social Work's Grand Challenges Initiative. The integration of immigrant youth into American society is paramount to the profession of social work achieving the stated Grand Challenge of achieving greater opportunity and justice (Calvo et al., 2016). Also Calvo et al. (2016) note – the integration of immigrant communities requires a "concerted effort". The work of this dissertation is one step in contributing to this effort, with the hope of drawing greater attention to these essential areas of social work practice and research.

References

Aboud, F., Mendelson, M., & Purdy, K. (2003). Cross-race peer relations and friendship quality. *International Journal of Behavioral Development*, *27*(2), 165–173. doi:10.1080/01650250244000164

Aboud, F., & Sankar, J. (2007). Friendship and identity in a language-integrated school. *International Journal of Behavioral Development*, *31*(5), 445–453. doi:10.1177/0165025407081469

Alba, R., Kasinitz, P., & Waters, M. (2011). The kids are (mostly) alright: Second-generation assimilation: Comments on Haller, Portes and Lynch. *Social Forces*, *89*(3), 763–774. doi:10.1353/sof.2011.0024

Alba, R., & Nee, V. (2009). *Remaking the american mainstream: Assimilation and contemporary immigration*. Cambridge: Harvard University Press.

Alba, R., Sloan, J., & Sperling, J. (2011). The integration imperative: The children of low-status immigrants in the schools of wealthy societies. *Annual Review of Sociology*, *37*(1), 395–415. doi:10.1146/annurev-soc-081309-150219

Allen, J., & Antonishak, J. (2008). Adolescent peer influences: Beyond the dark side. In P. MJ & D. KA (Eds.), *Understanding Peer Influence in Children and Adolescents* (pp. 141–160). New York, NY: Guilford Press.

Allen, M., Elliott, M., Fuligni, A., Morales, L., Hambarsoomian, K., & Schuster, M. (2008). The relationship between Spanish language use and substance use behaviors among Latino youth: A social network approach. *Journal of Adolescent Health*, *43*(4), 372–379. doi:10.1016/j.jadohealth.2008.02.016

Allport, G. (1954). *The nature of prejudice*. New York: Perseus Books.

Baerveldt, C., Van Duijn, M. A. J., Vermeij, L., & Van Hemert, D. A. (2004). Ethnic boundaries and personal choice. Assessing the influence of individual inclinations to choose intra-ethnic relationships on pupils' networks. *Social Networks*, *26*(1), 55–74. doi:10.1016/j.socnet.2004.01.003

Balsa, A. I., Homer, J. F., French, M. T., & Norton, E. C. (2011). Alcohol use and popularity: Social payoffs from conforming to peers' behavior. *Journal of Research on Adolescence*, *21*(3), 559–568. doi:10.1111/j.1532-7795.2010.00704.x

Bandura, A. (1976). *Social Learning Theory*. Englewood Cliffs, NJ: Prentice Hall.

Bandura, A. (1989). Human agency in social cognitive theory. *The American Psychologist*, *44*(9), 1175–84.

Bandura, A. (2006). Toward a Psychology of Human Agency. *Perspectives on Psychological Science*, *1*(2), 164–180. doi:10.1111/j.1745-6916.2006.00011.x

Bankston III, C., & Caldas, S. (1996). Majority African American schools and social injustice: The influence of de facto segregation on academic achievement. *Social Forces*, *75*(2), 535–555.

Benner, A. D., & Graham, S. (2009). The Transition to high school as a developmental process among multiethnic urban youth. *Child Development*, *80*(2), 356–376.

Berkman, L. F., Glass, T., Brissette, I., & Seeman, T. E. (2000). From social integration to health: Durkheim in the new millennium. *Social Science & Medicine (1982)*, *51*(6), 843–57. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/10972429

Berry, J. (2013). Integration as a mode of immigrant acculturation. In E. Grigorenko (Ed.), *Handbook of US immigration and education* (pp. 41–58). New York, NY: Springer.

Berry, J., Phinney, J., Sam, D., & Vedder, P. (2006). Immigrant youth: Acculturation, identity, and adaptation. *Applied Psychology*, *55*(3), 303–332. doi:10.1111/j.1464-0597.2006.00256.x

Berry, J., & Sabatier, C. (2010). Acculturation, discrimination, and adaptation among second-generation immigrant youth in Montreal and Paris. *International Journal of Intercultural Relations*, *34*(3), 191–207. doi:10.1016/j.ijintrel.2009.11.007

Betancur, J. J. (1996). The settlement experience of Latinos in Chicago: Segregation, speculation, and the ecology model. *Social Forces*, *74*(4), 1299–1324. doi:10.2307/2580352

Blau, P. M. (1964). *Exchange and power in social life*. New York: Wiley.

Blau, P. M. (1977). A macrocosial theory of social structure. *American Journal of Sociology*, *83*(1), 26–54.

Bobo, L., & Hutchings, V. L. (1996). Perceptions of Racial Group Competition: Extending Blumer's Theory of Group Position to a Multiracial Social Context. *American Sociological Review*, *61*(6), 951. doi:10.2307/2096302

Bonacich, P. (1987). Power and centrality: A family of measures. *American Journal of Sociology*, *92*(5), 1170–1182.

Borgatti, S., Carley, K., & Krackhardt, D. (2006). On the robustness of centrality measures under conditions of imperfect data. *Social Networks*, *28*(2), 124–136. doi:10.1016/j.socnet.2005.05.001

Borgatti, S., Everett, M., & Johnson, J. (2013). *Analyzing social networks*. Thousand Oaks, CA: Sage.

Borgatti, S., & Molina, J. (2003). Ethical and strategic issues in organizational social

network analysis. *The Journal of Applied Behavioral …*, *39*(3), 337–349. doi:10.1177/0021886303258111

Bowlby, J. (1982). *Attachment and Loss* (Vol. I). New York: Basic Books.

Boyd, M. (2002). Educational attainments of immigrant offspring: Success or segmented assimilation? *International Migration Review*, *36*(4), 1037–1060. doi:10.1111/j.1747-7379.2002.tb00117.x

Briones, E., & Tabernero, C. (2012). Social cognitive and demographic factors related to adolescents' intrinsic satisfaction with school. *Social Psychology of Education*, *15*(2), 219–232. doi:10.1007/s11218-012-9176-4

Bronfenbrenner, U., & Morris, P. A. (2006). The bioecological model of human development. In W. Damon & R. Lerner (Eds.), *Handbook of child psychology* (pp. 793–828). New York: John Wiley & Sons, Inc.

Brown, S. K. (2006). Structural assimilation revisited: Mexican-origin nativity and cross-ethnic primary ties. *Social Forces*, *85*(1), 75–92. doi:10.1353/sof.2006.0118

Brown, S. K., & Bean, F. D. (2006). Assimilation models, old and new: Explaining a long-term process. *Migration Information Source*, 3–41.

Bui, H. (2012). Immigrant generational status and delinquency in adolescence: Segmented assimilation and racial-ethnic differences. In C. Garcia Coll & A. K. Marks (Eds.), *The immigrant paradox in children and adolescents: Is becoming American a developmental risk?* (pp. 139–158). Washington, DC: American Psychological Association.

Bui, H. (2013). Racial and ethnic differences in the immigrant paradox in substance use. *Journal of Immigrant and Minority Health*, *15*(5), 866–881. doi:10.1007/s10903-

012-9670-y

Calvó-Armengol, A. (2009). Peer effects and social networks in education. *The Review of Economic Studies*, *76*(4), 1239–1267.

Calvo, R., Ortiz, L., Padilla, Y., Waters, M., Lubben, J., Egmont, W., … Villa, P. (2016). Achieving equal opportunity and justice: The integration of Latina/o immigrants into American society. *American Academy of Social Work and Social Welfare: Grand Challenges of Social Work Initiative*. Retrieved from http://aaswsw.org/grand-challenges-initiative/12-challenges/achieve-equal-opportunity-and-justice/

Capps, R., Fix, M., Murray, J., Ost, J., Passel, J. S., & Herwantoro, S. (2005). The New Demography of America's Schools: Immigration and the No Child Left Behind Act. *English*, 46. Retrieved from http://www.urban.org

Carhill, A., Suárez-Orozco, C., & Paez, M. (2008). Explaining English language proficiency among adolescent immigrant students. *American Educational Research Journal*, *45*(4), 1155–1179. doi:10.3102/0002831208321443

Cavanagh, S. E. (2007). Peers, drinking, and the assimilation of Mexican American youth. *Sociological Perspectives*, *50*(3), 393–416. doi:10.1525/sop.2007.50.3.393

Chan, W. Y., & Birman, D. (2009). Cross-and same-race friendships of Vietnamese immigrant adolescents: A focus on acculturation and school diversity. *International Journal of Intercultural Relations*, *33*(4), 313–324. doi:10.1016/j.ijintrel.2009.05.003

Chen, X., & Graham, S. (2015). Cross-ethnic friendships and intergroup attitudes among Asian American adolescents. *Child Development*, *86*(3), n/a–n/a. doi:10.1111/cdev.12339

Cherng, H., Turney, K., & Kao, G. (2014). Less socially engaged? Participation in friendship and extracurricular activities among racial/ethnic minority and immigrant adolescents. *Teachers College Record*, *116*(3), 1–28.

Colby, S. L., & Ortman, J. M. (2014). Projections of the size and composition of the US population: 2014 to 2060. *Current Population Reports*, P25–1143. Retrieved from http://www.census.gov/content/dam/Census/library/publications/2015/demo/p25-1143.pdf

Coleman, J. (1988). Social capital in the creation of human capital. *American Journal of Sociology*, *94*(1988).

Coleman, J. (1994). *Foundations of social theory*. Cambridge, MA: Harvard University Press.

Costenbader, E., & Valente, T. W. (2003). The stability of centrality measures when networks are sampled. *Social Networks*, *25*(4), 283–307. doi:10.1016/S0378-8733(03)00012-1

Crain, R. L., & Mahard, R. E. (1983). The effect of research methodology on desegregation-achievement studies: A meta-analysis. *American Journal of Sociology*, *88*(52475), 839–854.

Crosnoe, R. (2012). Studying the immigrant paradox in the Mexican-origin population. In C. Garcia Coll & A. K. Marks (Eds.), *The immigrant paradox in children and adolescents: Is becoming American a developmental risk?* (pp. 61–76). Washington, DC: American Psychological Association.

Crosnoe, R., & López Turley, R. N. (2011). K-12 educational outcomes of immigrant youth. *Future of Children*, *21*(1), 129–152. doi:10.1353/foc.2011.0008

Crosnoe, R., & Lopez-Gonzalez, L. (2005). Immigration from Mexico, school composition, and adolescent functioning. *Sociological Perspectives*, *48*(1), 1–24.

Crul, M. (2004). The integration of immigrant youth. In M. Suarez-Orozco (Ed.), *Learning in the global era: International perspectives on globalization and education* (pp. 213–231). University of California Press.

Cunningham, S. A., Ruben, J. D., & Venkat Narayan, K. M. (2008). Health of foreign-born people in the United States: A review. *Health and Place*, *14*(4), 623–635. doi:10.1016/j.healthplace.2007.12.002

Currarini, S., Jackson, M. O., & Pin, P. (2009). An Economic Model of Friendship: Homophily, Minorities, and Segregation. *Econometrica*, *77*(4), 1003–1045. doi:10.3982/ECTA7528

Currarini, S., Jackson, M. O., Pin, P., & Papadimitriou, C. (2010). Identifying the roles of race-based choice and chance in high school friendship network formation. *Proceedings of the National Academy of Sciences of the United States of America*, *107*(11), 4857–4861. doi:10.1073/pnas.0911793107

Dipietro, S. M., & McGloin, J. M. (2012). Differential susceptibility? Immigrant youth and peer influence. *Criminology*, *50*(3), 711–742. doi:10.1111/j.1745-9125.2012.00273.x

Dishion, T., & Tipsord, J. (2011). Peer contagion in child and adolescent social and emotional development. *Annual Review of Psychology*, *62*, 189–214. doi:10.1146/annurev.psych.093008.100412.Peer

Dornbusch, S. (1989). The sociology of adolescence. *Annual Review of Sociology*, *15*, 233–259.

Doyle, J. M., & Kao, G. (2007). Friendship choices of multiracial adolescents: Racial homophily, blending, or amalgamation? *Social Science Research*, *36*(2), 633–653. doi:10.1016/j.ssresearch.2006.12.001

Driscoll, A., Russell, S., & Crockett, L. (2007). Parenting styles and youth well-being across immigrant generations. *Journal of Family Issues*, *29*, 185–209. doi:10.1177/0192513X07307843

Duriez, B., Giletta, M., Kuppens, P., & Vansteenkiste, M. (2013). Extrinsic relative to intrinsic goal pursuits and peer dynamics: Selection and influence processes among adolescents. *Journal of Adolescence*, *36*(5), 925–933. doi:10.1016/j.adolescence.2013.07.009

Eitle, T. M., Wahl, A. M. G., & Aranda, E. (2009). Immigrant generation, selective acculturation, and alcohol use among Latina/o adolescents. *Social Science Research*, *38*(3), 732–742. doi:10.1016/j.ssresearch.2009.01.006

Enright, K. A. (2011). Language and literacy for a new mainstream. *American Educational Research Journal*, *48*(1), 80–118. doi:10.3102/0002831210368989

Epstein, J. (1991). School programs and teacher practices of parent involvement in inner-city elementary and middle schools. *The Elementary School Journal*, *91*(3), 289–305.

Fernandez-Kelly, P. (2007). NAFTA and Beyond: Alternative perspectives in the study of global trade and development. *The ANNALS of the American Academy of Political and Social Science*, *610*(1), 6–19. doi:10.1177/0002716206297972

Fernandez-Kelly, P., & Massey, D. S. (2007). Borders for whom? The role of NAFTA in Mexico-U.S. migration. *The ANNALS of the American Academy of Political and*

Social Science, *610*(March), 98–118. doi:10.1177/0002716206297449

Flashman, J. (2012). Academic achievement and its impact on friend dynamics. *Sociology of Education*. doi:10.1177/0038040711417014

Fordham, S., & Ogbu, J. (1986). Black students' school success: Coping with the "burden of 'acting White.'" *The Urban Review*, *18*(3), 176–206.

Fortuin, J., van Geel, M., Ziberna, A., & Vedder, P. (2014). Ethnic preferences in friendships and casual contacts between majority and minority children in the Netherlands. *International Journal of Intercultural Relations*, *41*, 57–65. doi:10.1016/j.ijintrel.2014.05.005

Frank, K. A., Muller, C., & Mueller, A. S. (2013). The embeddedness of adolescent friendship nominations: The formation of social capital in emergent network structures. *American Journal of Sociology*, *119*(1), 216–253. doi:10.1086/672081

Fuligni, A. (1997). The academic achievement of adolescents from immigrant families: The role of family background, attitudes, and behavior. *Child Development*, *68*(2), 351–363.

Gaertner, S., & Dovidio, J. (2012). *Reducing intergroup bias: The Common Ingroup Identity Model*. New York: Routledge.

Gándara, P. (2010). The Latino education crisis. *Educational Leadership*, *February*, 24–30.

Gándara, P. (2015). With the future on the line: Why studying Latino education is so important. *American Journal of Education*, *121*(3), 451–463.

Gándara, P., O'Hara, S., & Gutiérrez, D. (2004). The changing shape of aspirations: Peer influence on achievement behavior. In M. A. Gibson, P. C. Gandara, & J. P.

Koyama (Eds.), *School connections: US Mexican youth, peers, and school achievement* (pp. 39–62). New York: Teachers College Press.

Garcia Coll, C., Akiba, D., Palacios, N., Bailey, B., Silver, R., DiMartino, L., & Chin, C. (2002). Parental involvement in children's education: Lessons from three immigrant groups. *Parenting: Science and Practice*, *2*(3), 303–324.

Garcia Coll, C., & Marks, A. K. (2012). Introduction. In C. Garcia Coll & A. Kerivan Marks (Eds.), *The immigrant paradox in children and adolescents: Is becoming American a developmental risk?* (pp. 3–14). Washington, DC: American Psychological Association.

Gelman, A., Carlin, J. B., Stern, H. S., & Rubin, D. B. (2004). *Bayesian data analysis* (2nd ed.). London: Chapman & Hall/CRC.

Georgiades, K., Boyle, M. H., & Fife, K. a. (2013). Emotional and behavioral problems among adolescent students: The role of immigrant, racial/ethnic congruence and belongingness in schools. *Journal of Youth and Adolescence*, *42*(9), 1473–1492. doi:10.1007/s10964-012-9868-2

González, M. C., Herrmann, H. J., Kertész, J., & Vicsek, T. (2007). Community structure and ethnic preferences in school friendship networks. *Physica A: Statistical Mechanics and Its Applications*, *379*(1), 307–316. doi:10.1016/j.physa.2007.01.002

Goodreau, S., Handcock, M., Hunter, D., Butts, C., & Morris, M. (2008). A statnet tutorial. *Journal of Statistical Software*, *24*(9), 1–27. doi:10.1016/j.biotechadv.2011.08.021.Secreted

Goodreau, S., Kitts, J., & Morris, M. (2009). Birds of a feather, or friend of a friend? Using exponential random graph models to investigate adolescent social networks.

Demography, *46*(1), 103–125.

Goosby, B. J., & Walsemann, K. M. (2012). School racial composition and race/ethnic differences in early adulthood health. *Health and Place*, *18*(2), 296–304. doi:10.1016/j.healthplace.2011.10.002

Goza, F., & Ryabov, I. (2009). Adolescents' educational outcomes: Racial and ethnic variations in peer network importance. *Journal of Youth and Adolescence*, *38*(9), 1264–1279. doi:10.1007/s10964-009-9418-8

Graham, S., Munniksma, A., & Juvonen, J. (2014). Psychosocial benefits of cross-ethnic friendships in urban middle schools. *Child Development*, *85*(2), 469–483. doi:10.1111/cdev.12159

Granovetter, M. (1973). The strength of weak ties. *American Journal of Sociology*, *78*(6), 1360–1380.

Greenman, E. (2011). Assimilation choices among immigrant families: Does school context matter? *International Migration Review*, *45*(1), 29–67. doi:10.1111/j.1747-7379.2010.00828.x

Haller, W., Portes, A., & Lynch, S. M. (2011a). On the dangers of rosy lenses: Reply to Alba, Kasinitz and Waters. *Social Forces*, *89*(3), 775–782. doi:10.1353/sof.2011.0018

Haller, W., Portes, A., & Lynch, S. S. M. (2011b). Dreams fulfilled, dreams shattered: Determinants of segmented assimilation in the second-generation. *Social Forces*, *89*(3), 733–762. doi:10.1353/sof.2011.0003

Hamm, J. V, Brown, B. B., & Heck, D. J. (2005). Bridging the ethnic divide: Student and school characteristics in African American, Asian-descent, Latino, and White

adolescents' cross-ethnic friend nominations. *Journal of Research on Adolescence*, *15*(1), 21–46. doi:10.1111/j.1532-7795.2005.00085.x

Han, W.-J. (2012). Bilingualism and academic achievement: Does generation status make a difference? In C. Garcia Coll & A. K. Marks (Eds.), *The immigrant paradox in children and adolescents: Is becoming American a developmental risk?* (pp. 161–184). Washington, DC: American Psychological Association.

Handcock, M. S., Hunter, D. R., Butts, C. T., Goodreau, S. M., & Morris, M. (2008). statnet: Software tools for the representation, visualization, analysis and simulation of network data. *Journal of Statistical Software*, *24*(1), 1–11.

Hao, L., & Woo, H. S. (2012). Distinct trajectories in the transition to adulthood: Are children of immigrants advantaged? *Child Development*, *83*(5), 1623–1639. doi:10.1111/j.1467-8624.2012.01798.x

Harker, K. (2001). Immigrant generation, assimilation, and adolescent psychological well-being. *Social Forces*, *79*(3), 969–1004.

Harris, C. T., & Feldmeyer, B. (2013). Latino immigration and White, Black, and Latino violent crime: A comparison of traditional and non-traditional immigrant destinations. *Social Science Research*, *42*(1), 202–216. doi:10.1016/j.ssresearch.2012.08.014

Harris, K., Halpern, C., Whitsel, E., Hussey, J., Tabor, J., Entzel, P., & Udry, J. (2009). The National Longitudinal Study of Adolescent Health: Research Design. Retrieved from http://www.cpc.unc.edu/projects/addhealth/design

Hill, N. E., & Torres, K. (2010). Negotiating the American Dream : The paradox of aspirations and achievement among Latino students and engagement between their

families and schools. *Journal of Social Issues*, *66*(1), 95–112.

Hirschman, C. (2001). The educational enrollment of immigrant youth: a test of the segmented-assimilation hypothesis. *Demography*, *38*(3), 317–336. doi:10.1353/dem.2001.0028

Hjalmarsson, S., & Mood, C. (2015). Do poorer youth have fewer friends? The role of household and child economic resources in adolescent school-class friendships. *Children and Youth Services Review*, *57*, 201–211. doi:10.1016/j.childyouth.2015.08.013

Hong, J. S., & Espelage, D. L. (2012). A review of research on bullying and peer victimization in school: An ecological system analysis. *Aggression and Violent Behavior*, *17*(4), 311–322. doi:10.1016/j.avb.2012.03.003

Hoover-Dempsey, K., Walker, J., Sandler, H., Whetsel, D., Green, C., Wilkins, A., & Closson, K. (2005). Why do parents become involved? Research findings and implications. *The Elementary School Journal*, *106*(2), 105–130.

Houtte, V. H., & Stevens, P. a. J. (2009). School ethnic composition and students' integration outside and inside schools in Belgium. *Sociology of Education*, *82*(3), 217–239. doi:10.1177/003804070908200302

Hox, J. (2010). *Multilevel analysis: Techniques and applications*. New York: Routledge.

Huang, G. C., Soto, D., Fujimoto, K., & Valente, T. W. (2014). The interplay of friendship networks and social networking sites: Longitudinal analysis of selection and influence effects on adolescent smoking and alcohol use. *American Journal of Public Health*, *104*(8), 51–60. doi:10.2105/AJPH.2014.302038

Huisman, M., & Steglich, C. (2008). Treatment of non-response in longitudinal network

studies. *Social Networks*, *30*(4), 297–308. doi:10.1016/j.socnet.2008.04.004

Hunt, L. M., Schneider, S., & Comer, B. (2004). Should "acculturation" be a variable in health research? A critical review of research on US Hispanics. *Social Science and Medicine*, *59*(5), 973–986. doi:10.1016/j.socscimed.2003.12.009

Hunter, D. R., Handcock, M. S., Butts, C. T., Goodreau, S. M., & Morris, M. (2008). ergm: A package to fit, simulate and diagnose exponential-family models for networks. *Journal of Statistical Software*, *24*(3), nihpa54860.

Huntington, S. (2004). *Who are we?: The challenges to America's national identity*. New York: Simon & Schuster.

Jackson, M. I. (2011). Foreign-born health integration during the transition to adulthood: The case of weight. *Social Science Research*, *40*(5), 1419–1433. doi:10.1016/j.ssresearch.2011.04.008

Kao, G. (2004). Parental influences on the educational outcomes of immigrant youth. *International Migration Review*, *38*(2), 427–449.

Kao, G., & Joyner, K. (2004). Do race and ethnicity matter among friends? Activities among interracial, interethnic, and intraethnic adolescent friends. *The Sociological Quarterly*, *45*(3), 557–573. doi:10.1111/j.1533-8525.2004.tb02303.x

Kao, G., & Joyner, K. (2006). Do Hispanic and Asian adolescents practice panethnicity in friendship choices? *Social Science Quarterly*. doi:10.1111/j.1540-6237.2006.00411.x

Kao, G., & Thompson, J. (2003). Racial and ethnic stratification in educational achievement and attainment. *Educational Researcher*, *29*, 417–442. doi:10.1146/annurev.soc.29.010202.100019

Kao, G., & Vaquera, E. (2006). The salience of racial and ethnic identification in friendship choices among hispanic adolescents. *Hispanic Journal of Behavioral Sciences*, *28*(1), 23–47. doi:10.1016/j.regpep.2005.11.002

Keller, U., & Tillman, K. (2001). Post-secondary educational attainment of immigrant and native youth. *Social Forces*, *87*(1), 121–152.

Kinzler, K. D., Shutts, K., DeJesus, J., & Spelke, E. S. (2009). Accent trumps race in guiding children's social preferences. *Social Cognition*, *27*(4), 623–634. doi:10.1521/soco.2009.27.4.623

Kopak, A. M. (2012). The relative importance of immigrant generation for Mexican Americans' alcohol and tobacco use from adolescence to early adulthood. *Journal of Immigrant and Minority Health*, *15*, 569–576. doi:10.1007/s10903-012-9631-5

Kozol, J. (2005). *The shame of the nation: The restoration of apartheid schooling in America*. New York: Random House LLC.

Kroneberg, C. (2008). Ethnic communities and school performance among the new second-generation in the United States: Testing the theory of segmented assimilation. *The Annals of the American Academy of Political and Social Science*, *620*, 138–160. doi:10.1177/0002716208322714

Kuperminc, G., Darnell, A., & Alvarez-Jimenez, A. (2008). Parent involvement in the academic adjustment of Latino middle and high school youth: Teacher expectations and school belonging as mediators. *Journal of Adolescence*, *31*(4), 469–83.

La Greca, A. M., & Harrison, H. M. (2005). Adolescent peer relations, friendships, and romantic relationships: do they predict social anxiety and depression? *Journal of Clinical Child and Adolescent Psychology*, *67*(1), 49–61.

doi:10.1207/s15374424jccp3401_5

Ladson-Billings. (2006). From the achievement gap to the education dept: Understanding achievement in US schools. *Educational Researcher*, *35*(7), 3–12.

Lara, M., Gamboa, C., Kahramanian, M. I., Morales, L. S., & Bautista, D. E. H. (2005). Acculturation and Latino health in the United States: A review of the literature and its sociopolitical context. *Annual Review of Public Health*, *26*, 367–397. doi:10.1146/annurev.publhealth.26.021304.144615

Lee, J. (2002). Racial and ethnic achievement gap trends: Reversing the progress toward equality? *Educational Researcher*, *1*, 3–12.

Lee, M., Madyun, N., Lam, B. ., & Jumale, M. (2014). School contexts and "acting White"*: Peer networks of Somali immigrant youths in an Afrocentric charter school. *Schools: Studies in Education*, *11*(1), 122–156.

Lenhart, A., Purcell, K., Smith, A., & Zickuhr, K. (2010). Social media & mobile internet use among teens and young adults. *Millenials: A Portrait of Generation Next. Pew Internet & American Life Project.* doi:10.3898/NEWF.78.02.2013

Leszczensky, L., & Pink, S. (2015). Ethnic segregation of friendship networks in school: Testing a rational-choice argument of differences in ethnic homophily between classroom- and grade-level networks. *Social Networks*, *42*, 18–26. doi:10.1016/j.socnet.2015.02.002

Li, Y., Doyle Lynch, A., Kalvin, C., Liu, J., & Lerner, R. (2011). Peer relationships as a context for the development of school engagement during early adolescence. *International Journal of Behavioral Development*, *35*(4), 329–342. doi:10.1177/0165025411402578

Lichter, D. T. (2013). Integration or fragmentation? Racial diversity and the American future. *Demography*, *50*(2), 359–391. doi:10.1007/s13524-013-0197-1

Linn, R., & Welner, K. (2007). Race-concious policies for assigning students to schools: Social science resaerch and the Supreme Court cases. Committee on Social Science Research Evidence on Racial Diversity in Schools. *National Academy of Education*.

Logan, J. R., Stowell, J., & Oakley, D. (2002). *Choosing segregation: Racial imbalanace in American public schools, 1990-2000*. *Lewis Mumford Center for Comparative Urban and Regional Research*.

Lucas, S. R., & Berends, M. (2002). Sociodemographic diversity, correlated achievement, and de facto tracking. *Sociology of Education*, *75*(4), 328–348. doi:10.2307/3090282

Lucas, S. R., & Berends, M. (2007). Race and track location in U.S. public schools. *Research in Social Stratification and Mobility*, *25*(3), 169–187. doi:10.1016/j.rssm.2006.12.002

Lusher, D., Koskinen, J., & Robins, G. (2013). *Exponential random graph models for social networks`*. Oxford: Cambridge University Press.

Marsden, P. V. (2005). The sociology of James S. Coleman. *Annual Review of Sociology*, *31*, xii–24. doi:10.2307/29737709

Mayer, A., & Puller, S. L. (2008). The old boy (and girl) network: Social network formation on university campuses. *Journal of Public Economics*, *92*(1-2), 329–347. doi:10.1016/j.jpubeco.2007.09.001

McDonald, K. L., Dashiell-Aje, E., Menzer, M. M., Rubin, K. H., Oh, W., & Bowker, J. C. (2013). Contributions of racial and sociobehavioral homophily to friendship

stability and quality among same-race and cross-race friends. *The Journal of Early Adolescence*, *33*(7), 897–919. doi:10.1177/0272431612472259

McGill, R. K., Way, N., & Hughes, D. (2012). Intra- and interracial best friendships during middle school: Links to social and emotional well-being. *Journal of Research on Adolescence*, *22*(4), 722–738. doi:10.1111/j.1532-7795.2012.00826.x

McPherson, M., Smith-Lovin, L., & Cook, J. M. (2001). Birds of a feather: Homophily in social networks. *Annual Review of Sociology*, *27*(2001), 415–444. doi:10.1146/annurev.soc.27.1.415

Mendoza, F. S. (2009). Health disparities and children in immigrant families: a research agenda. *Pediatrics*, *124 Suppl* (November), S187–S195. doi:10.1542/peds.2009-1100F

Mercken, L., Steglich, C., Sinclair, P., Holliday, J., & Moore, L. A. R. (2012). A longitudinal social network analysis of peer influence, peer selection, and smoking behavior among adolescents in British schools. *Health Psychology*, *31*(4), 450–459. doi:10.1037/a0026876

Mishna, F., Cook, C., Gadalla, T., Daciuk, J., & Solomon, S. (2010). Cyber bullying behaviors among middle and high school students. *American Journal of Orthopsychiatry*, *80*(3), 362–374. doi:10.1111/j.1939-0025.2010.01040.x

Mittelstadt, M., Speaker, B., Meissner, D., & Chishti, M. (2011). *Through the prism of national security: major immigration policy and program changes in the decade since 9/11*. *MPI Paper*.

Moody, J. (2001a). Peer influence groups: Identifying dense clusters in large networks. *Social Networks*, *23*(4), 261–283. doi:10.1016/S0378-8733(01)00042-9

Moody, J. (2001b). Race, school integration, and friendship segregation in America. *American Journal of Sociology*, *107*(3), 679–716.

Morris, M., Handcock, M. S., & Hunter, D. R. (2008). Specification of exponential-family random graph models: Terms and computational aspects. *Journal of Statistical Software*, *24*(4), 1548–7660.

Mouw, T., & Entwisle, B. (2006). Residential segregation and interracial friendship in schools. *American Journal of Sociology*, *112*(2), 394–441. doi:10.1086/506415

Nelson, R. M., & DeBacker, T. K. (2008). Achievement motivation in adolescents: The role of peer climate and best friends. *The Journal of Experimental Education*, *76*(2), 170–189. doi:10.3200/JEXE.76.2.170-190

O'Keeffe, G. S., & Clarke-Pearson, K. (2011). The impact of social media on children, adolescents, and families. *American Academy of Pediatrics*, *127*(4), 800–804. doi:10.1542/peds.2011-0054

Ogbu, J. U. (2004). Collective identity and the burden of "acting white" in black history, community, and education. *The Urban Review*, *36*(1), 1–35. doi:10.1023/B:URRE.0000042734.83194.f6

Ojanen, T., Sijtsema, J. J., Hawley, P. H., & Little, T. D. (2010). Intrinsic and extrinsic motivation in early adolescents' friendship development: Friendship selection, influence, and prospective friendship quality. *Journal of Adolescence*, *33*(6), 837–851. doi:10.1016/j.adolescence.2010.08.004

Okamoto, D. G., Herda, D., & Hartzog, C. (2013). Beyond good grades: School composition and immigrant youth participation in extracurricular activities. *Social Science Research*, *42*(1), 155–168. doi:10.1016/j.ssresearch.2012.08.005

Orfield, G. (1983). *Public school desegregation in the United States, 1968-1980*. Washington, DC: Joint Center for Political Studies.

Orfield, G., & Frankenburg, E. (2014). *Brown at 60: Great progress, a long retreat and an uncertain future*.

Paluck, E. L. (2011). Peer pressure against prejudice: A high school field experiment examining social network change. *Journal of Experimental Social Psychology*, *47*(2), 350–358. doi:10.1016/j.jesp.2010.11.017

Paluck, E. L., & Green, D. P. (2009). Prejudice reduction: what works? A review and assessment of research and practice. *Annual Review of Psychology*, *60*, 339–67. doi:10.1146/annurev.psych.60.110707.163607

Paluck, E. L., Shepherd, H., & Aronow, P. M. (2016). Changing climates of conflict: A social network experiment in 56 schools. *Proceedings of the National Academy of Sciences*, 201514483. doi:10.1073/pnas.1514483113

Passel, J. S. (2011). Demography of immigrant youth: Past, present, and future. *Future of Children*, *21*(1), 19–41.

Perreira, K., Deeb-Sossa, N., Harris, K., & Bollen, K. (2005). What are we measuring? An evaluation of the CES-D across race/ethnicity and immigrant generation. *Social Forces*, *83*(4), 1567–1601.

Pettigrew, T. (1998). Intergroup contact theory. *Annual Review of Psychology*, *49*(July), 65–85. doi:10.1146/annurev.psych.49.1.65

Portes, A., & Rivas, A. (2011). The adaptation of migrant children. *The Future of Children*, *21*(1), 219–246.

Portes, A., & Zhou, M. (1993). The new second-generation: segmented assimilation and

its variants. *The Annals*, *530*, 74–96.

Putnam, R. D. (2000). *Bowling alone: The collapse and revival of American community*. New York: Simon & Schuster.

Quillian, L., & Campbell, M. (2003). Beyond Black and White: The present and future of multiracial friendship segregation. *American Sociological Review*, *68*(4), 540–566.

Raudenbush, S., & Bryk, A. (2002). *Hierarchical linear models* (2nd ed.). Thousand Oaks, CA: Sage Publications, Inc.

Reed, K. (2015). School incorporation and high school completion among Latino youth. *American Journal of Education*, *121*(3), 347–379.

Reitz, A. K., Asendorpf, J. B., & Motti-Stefanidi, F. (2015). When do immigrant adolescents feel personally discriminated against? Longitudinal effects of peer preference. *International Journal of Behavioral Development*, *39*(3), 197–209. doi:10.1177/0165025414567008

Reynolds, A. D., Crea, T. M., Medina, F. J., Degnan, E., & McRoy, R. (2015). A Mixed-Methods Case Study of Parent Involvement in an Urban High School Serving Minority Students. *Urban Education*, *50*(6), 750–755. doi:10.1177/0042085914534272

Richards, M. P. (2014). The gerrymandering of school attendance zones and the segregation of public schools: A geospatial analysis. *American Educational Research Journal*, *51*(6), 1119–1157. doi:10.3102/0002831214553652

Riegle-Crumb, C., & Callahan, R. M. (2009). Exploring the academic benefits of friendship ties for latino boys and girls. *Social Science Quarterly*, *90*(3), 611–631. doi:10.1111/j.1540-6237.2009.00634.x

Ripley, R., Snijders, T., Boda, Z., Vörös, A., & Preciado, P. (2016). *Manual for RSIENA*. University of Oxtord; University of Groningen. Retrieved from https://www.uni-due.de/hummell/sna/R/RSiena_Manual.pdf

Robins, G. (2011). Exponential random graph models for social networks. In J. Scott & P. Carrington (Eds.), *The SAGE Handbook of Social Network Analysis* (pp. 484–500). Thousand Oaks, CA: SAGE Publications.

Rosenburg, M. (1965). *Society and the adolescent self-image*. Princeton, NJ: Princeton University Press.

Rude, J., & Herda, D. (2010). Best friends forever? Race and the stability of adolescent friendships. *Social Forces*, *89*(2), 585–607. doi:10.1353/sof.2010.0059

Ryabov, I. (2009). The role of peer social capital in educational assimilation of immigrant youths. *Sociological Inquiry*, *79*(4), 453–480. doi:10.1111/j.1475-682X.2009.00300.x

Ryabov, I. (2012). The influence of co-racial versus inter-racial peer friendships on academic achievement of Asian-American adolescents. *Asian American Journal of Psychology*, *4*(3), 201–210. doi:10.1037/a0029789

Salas-Wright, C. P., Vaughn, M. G., Schwartz, S. J., & Córdova, D. (2015). An "immigrant paradox" for adolescent externalizing behavior? Evidence from a national sample. *Social Psychiatry and Psychiatric Epidemiology*. doi:10.1007/s00127-015-1115-1

Sampson, R. J., Morenoff, J. D., & Raudenbush, S. (2005). Social anatomy of racial and ethnic disparities in violence. *American Journal of Public Health*, *95*(2), 224–232. doi:10.2105/AJPH.2004.037705

Savelkoul, M., Scheepers, P., Tolsma, J., & Hagendoorn, L. (2011). Anti-Muslim attitudes in the Netherlands: Tests of contradictory hypotheses derived from ethnic competition theory and intergroup contact theory. *European Sociological Review*, *27*(6), 741–758. doi:10.1093/esr/jcq035

Scanlan, M., & López, F. (2014). *Leadership for culturally and linguistically responsive schools*. New York: Routledge.

Schaefer, D. R., & Simpkins, S. D. (2014). Using social network analysis to clarify the role of obesity in selection of adolescent friends. *American Journal of Public Health*, *104*(7), 1223–9. doi:10.2105/AJPH.2013.301768

Schaefer, D. R., Simpkins, S. D., Vest, A. E., & Price, C. D. (2011). The contribution of extracurricular activities to adolescent friendships: New insights through social network analysis. *Developmental Psychology*, *47*(4), 1141–52. doi:10.1037/a0024091

Schafer, J. L. (1997). *Analysis of incomplete multivariate data.* Boca Raton, FL: Chapman & Hall/CRC.

Scheepers, P., Gijsberts, M., & Coenders, M. (2002). Ethnic exclusionism in European countries. *European Sociological Review*, *18*(1), 17–34.

Shrum, W., Cheek, N. H., & Hunter, S. M. (1988). Friendship in school: Gender and racial homophily. *Sociology of Education*, *61*(4), 227–239. doi:10.2307/2112441

Sieving, R. E., Beuhring, T., Resnick, M. D., Bearinger, L. H., Shew, M., Ireland, M., & Blum, R. W. (2001). Development of adolescent self-report measures from the National Longitudinal Study of Adolescent Health. *The Journal of Adolescent Health*, *28*(1), 73–81. doi:S1054-139X(00)00155-5 [pii]

Smetana, J. G., Campione-Barr, N., & Metzger, A. (2006). Adolescent development in interpersonal and societal contexts. *Annual Review of Psychology*, *57*, 255–84. doi:10.1146/annurev.psych.57.102904.190124

Smith, S., Maas, I., & van Tubergen, F. (2014). Ethnic ingroup friendships in schools: Testing the by-product hypothesis in England, Germany, the Netherlands and Sweden. *Social Networks*, *39*(1), 33–45. doi:10.1016/j.socnet.2014.04.003

Snijders, T. (2011). Network dynamics. In J. Scott & P. Carrington (Eds.), *The SAGE Handbook of Social Network Analysis* (pp. 501–513). Thousand Oaks, CA: SAGE Publications.

Snijders, T., & Baerveldt, C. (2003). A multilevel network study of the effects of delinquent behavior on friendship evolution. *Journal of Mathematical Sociology*, *27*, 123–151. doi:10.1080/00222500390213119

Snijders, T., van de Bunt, G., & Steglich, C. (2010). Introduction to stochastic actor-based models for network dynamics. *Social Networks*, *32*(1), 44–60h. doi:10.1016/j.socnet.2009.02.004

South, S., & Haynie, D. (2004). Friendship networks of mobile adolescents. *Social Forces*, *83*(1), 315–350. doi:10.1353/sof.2004.0128

Stanton-Salazar, R. (1997). A social capital framework for understanding the socialization of racial minority children and youths. *Harvard Educational Review*, *67*(1), 1–40.

Stanton-Salazar, R. (2004). Social capital among working class minority students. In M. A. Gibson, P. C. Gandara, & J. P. Koyama (Eds.), *School connections: US Mexican youth, peers, and school achievement* (pp. 18–39). New York: Teachers College

Press.

Stanton-Salazar, R., & Urso Spina, S. (2005). Adolescent peer networks as a context for social and emotional support. *Youth & Society*, *36*(4), 379–417. doi:10.1177/0044118X04267814

Steele, C. (2011). *Whistling Vivaldi: How stereotypes affect us and what we can do*. New York: W. W. Norton & Company.

Steele, C., & Aronson, J. (1995). Stereotype threat and the intellectual test performance of African Americans. *Journal of Personality and Social Psychology*, *69*(5), 797–811. doi:10.1037/0022-3514.69.5.797

Steinbach, M. (2010). Quand je sors d'accueil : linguistic integration of immigrant adolescents in Quebec secondary schools. *Language, Culture and Curriculum*, *23*(2), 95–107. doi:10.1080/07908311003786711

Steinberg, L., & Monahan, K. C. (2007). Age differences in resistance to peer influence. *Developmental Psychology*, *43*(6), 1531–43. doi:10.1037/0012-1649.43.6.1531

Stroub, K. J., & Richards, M. P. (2013). From resegregation to reintegration: Trends in the racial/ethnic segregation of metropolitan public schools, 1993–2009. *American Educational Research Journal*, *50*(3), 497–531. doi:10.3102/0002831213478462

Suárez-Orozco, C., Pimentel, A., & Martin, M. (2009). The significance of relationships: Academic engagement and achievement among newcomer immigrant youth. *Teachers College Record*, *111*(3), 712–749.

Taylor, P. (2014). *The next America: Boomers, millenials, and the looming generational showdown*. Philadelphia, PA: Perseus Books.

Tropp, L. R., O'Brien, T. C., & Migacheva, K. (2014). How peer norms of inclusion and

exclusion predict children's interest in cross-ethnic friendships. *Journal of Social Issues*, *70*(1), 151–166. doi:10.1111/josi.12052

Tsai, J. (2006). Xenophobia, ethnic community, and immigrant youths' friendship network formation. *Adolescence*, *41*(162), 285–298.

Turney, K., & Kao, G. (2009). Barriers to school involvement : Are immigrant parents disadvantaged? *The Journal of Educational Research*, *102*(4), 257–271.

Udehn, L. (2002). The changing face of methodological individualism. *Annual Review of Sociology*, *28*(2002), 479–507. doi:10.2307/3069250

Ueno, K. (2005). The effects of friendship networks on adolescent depressive symptoms. *Social Science Research*, *34*(3), 484–510. doi:10.1016/j.ssresearch.2004.03.002

Ueno, K. (2009). Same-race friendships and school attachment: Demonstrating the interaction between personal network and school composition. *Sociological Forum*, *24*(3), 515–537.

Umberson, D., Crosnoe, R., & Reczek, C. (2010). Social relationships and health behavior across the life course. *Annual Review of Sociology*, *36*, 139–157. doi:10.1146/annurev-soc-070308-120011

US Department of Education. (2016). *Public elementary/secondary school universe school data*. Retrieved from https://nces.ed.gov/ccd/pubschuniv.asp

Valente, T. W. (2012). Network interventions. *Science*, *337*(6090), 49–53. doi:10.1126/science.1217330

Valente, T. W., Fujimoto, K., Unger, J. B., Soto, D. W., & Meeker, D. (2013). Variations in network boundary and type: A study of adolescent peer influences. *Social Networks*, *35*(3), 309–316. doi:10.1016/j.socnet.2013.02.008

van Ewijk, R., & Sleegers, P. (2010). Peer ethnicity and achievement: a meta-analysis into the compositional effect. *School Effectiveness and School Improvement*, *21*(3), 237–265. doi:10.1080/09243451003612671

van Zalk, M. H. W., Kerr, M., van Zalk, N., & Stattin, H. (2013). Xenophobia and tolerance toward immigrants in adolescence: Cross-influence processes within friendships. *Journal of Abnormal Child Psychology*, *41*(4), 627–39. doi:10.1007/s10802-012-9694-8

Vaquera, E. (2009). Friendship, educational engagement, and school belonging: Comparing Hispanic and White adolescents. *Hispanic Journal of Behavioral Sciences*, *31*(4), 492–514. doi:10.1177/0739986309346023

Vaquera, E., & Kao, G. (2008). Do you like me as much as I like you? Friendship reciprocity and its effects on school outcomes among adolescents. *Social Science Research*, *37*(1), 55–72. doi:10.1016/j.ssresearch.2006.11.002

Vermeij, L., van Duijn, M. a. J., & Baerveldt, C. (2009). Ethnic segregation in context: Social discrimination among native Dutch pupils and their ethnic minority classmates. *Social Networks*, *31*(4), 230–239. doi:10.1016/j.socnet.2009.06.002

Vermeulen, H. (2010). Segmented assimilation and cross-national comparative research on the integration of immigrants and their children. *Ethnic and Racial Studies*, *33*(7), 1214–1230. doi:10.1080/01419871003615306

Vervoort, M. H. M., Scholte, R. H. J., & Scheepers, P. L. H. (2011). Ethnic composition of school classes, majority-minority friendships, and adolescents' intergroup attitudes in the Netherlands. *Journal of Adolescence*, *34*(2), 257–67. doi:10.1016/j.adolescence.2010.05.005

Walsemann, K. M., Bell, B. a, & Maitra, D. (2011). The intersection of school racial composition and student race/ethnicity on adolescent depressive and somatic symptoms. *Social Science & Medicine (1982)*, *72*(11), 1873–83. doi:10.1016/j.socscimed.2011.03.033

Walsemann, K. M., Bell, B. a., & Goosby, B. J. (2011). Effect of school racial composition on trajectories of depressive symptoms from adolescence through early adulthood. *Race and Social Problems*, *3*(3), 131–145. doi:10.1007/s12552-011-9053-3

Warner, T. D., Fishbein, D. H., & Krebs, C. P. (2010). The risk of assimilating? Alcohol use among immigrant and U.S.-born Mexican youth. *Social Science Research*, *39*(1), 176–186. doi:10.1016/j.ssresearch.2009.07.001

Warren, M. R., & Mapp, K. L. (2011). *A match on dry grass: Community organizing as a catalyst for school reform*. Cambridge: Oxford University Press.

Waters, M. C., & Gerstein Pineau, M. (2015). *The integration of immigrants into American society*. Washington, DC: The National Academies Press.

Waters, M. C., & Jiménez, T. R. (2005). Assessing immigrant assimilation: New empirical and theoretical challenges. *Annual Review of Sociology*, *31*(1), 105–125. doi:10.1146/annurev.soc.29.010202.100026

Wentzel, K. (2014). Prosocial behavior and peer relations in adolescence. In L. M. Padilla-Walker & G. Carlo (Eds.), *Prosocial Development: A Multidimensional Approach* (pp. 178–200). New York, NY: Oxford University Press.

Wentzel, K., & Caldwell, K. (1997). Friendships, peer acceptance, and group membership: Relations to academic achievement in middle school. *Child*

Development, *68*(6), 1198–1209.

Wentzel, K., Filisetti, L., & Looney, L. (2007). Adolescent prosocial behavior: The role of self-processes and contextual cues. *Child Development*, *78*(3), 895–910. doi:10.1111/j.1467-8624.2007.01039.x

Williams, D. R., & Collins, C. (2001). Racial residential segregation: a fundamental cause of racial disparities in health. *Public Health Reports*, *116*(5), 404–416. doi:10.1093/phr/116.5.404

Wimmer, A., & Lewis, K. (2010). Beyond and below racial homophily: ERG models of a friendship network documented on Facebook. *American Journal of Sociology*, *116*(2), 583–642. doi:10.1086/653658

Windzio, M. (2015). Immigrant children and their parents: Is there an intergenerational interdependence of integration into social networks? *Social Networks*, *40*, 197–206. doi:10.1016/j.socnet.2014.11.002

Wortman, P. M., & Bryant, F. B. (1985). School Desegregation and Black Achievement: An Integrative Review. *Sociological Methods & Research*, *13*(3), 289–324. doi:10.1177/0049124185013003002

Young, J. T. N. (2011). How do they "end up together"? A social network analysis of self-control, homophily, and adolescent relationships. *Journal of Quantitative Criminology*, *27*(3), 251–273. doi:10.1007/s10940-010-9105-7

Zhou, M. (2014). Segmented assimilation and socio-economic integration of Chinese immigrant children in the USA. *Ethnic and Racial Studies*, *37*(7), 1172–1183. doi:10.1080/01419870.2014.874566

Zhou, M., & Kim, S. (2006). Community forces, social capital, and educational

achievement: The case of supplementary education in the Chinese and Korean immigrant communities. *Harvard Educational Review*, *76*(1), 1–29.